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News Briefs . . .

(Complete Stories Inside)

FAO MAKES its annual report on world consumption, production and trade in fertilizers. Consumption continues to grow, says FAO. Story inside.

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F. S. ROYSTER GUANO CO. of Norfolk, Va., offers to buy all outstanding stock of the Price Chemical Co. in Louisville, Ky. The transaction was due to be resolved by Aug. 30. Story inside.

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SMITH-DOUGLASS CO. bids successfully on the ammonia plant at the San Jacinto Ordnance Depot in Houston, Texas. Sale price was $2.6 million and the General Services Administration was the seller. Story inside.

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PLANS TO DOUBLE its production of wet-process phosphoric acid were announced by American Cyanamid Co. The company's Brewster, Fla., plant will undergo the enlargement. Story inside.

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PESTICIDE PRODUCTION in the U.S. during 1959 was 9% higher than the previous year, reported the U.S. Tariff Commission. Story inside.

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A REPORT ON the 1960 Southwest Fertilizer Conference in Galveston, Texas, is covered in this issue of Croplife. Story inside.

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FARMERS FERTILIZER CO. of Texarkana, Texas, buys the Nichols Fertilizer Co. in Oklahoma City, Okla. A new corporation is formed. Story inside.

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A NEW TRIPLE-SUPERPHOSPHATE plant is scheduled to be built in Tunisia as part of a program designed to industrialize that country's economy. Story inside.

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FERTILIZER SCHOOL PARTICIPANTS—Students and faculty at Aug. 16-17 safety school at National Safety Council headquarters, Chicago, represent one of five similar sessions being held. Upper photo, left to right: M. E. Peterson, staff representative, fertilizer section, National Safety Council, Chicago; Elmer Perrine, Nitrogen Division, Allied Chemical Corp., New York, national chairman of the fertilizer section; C. E. Alkire, superintendent, W. R. Grace & Co., Davison Chemical Division, New Albany, Ind.; John S. Mark, production manager, fertilizer manufacturing division of Farm Bureau Cooperative Assn., Inc., Columbus, Ohio, and W. C. (Billy) Creel, safety director, State of North Carolina Department of Labor, Raleigh.

In lower photo, students and faculty at Chicago session. Front row, left to right: Gene Harlan, Indiana Farm Bureau, Indianapolis; Mr. Alkire; Mr. Creel; Mr. Perrine; Emerson M. Jones, Allied Chemical Corp., Indianapolis, Ind.; and V. L. Sanford, Smith-Douglass Co., Inc., Saginaw, Mich. Middle row: Paul Cox, F. S. Royster Guano Co., Indianapolis, Ind.; Frank Wicinski, Swift & Co., Calumet City, Ill.; Frank T. Pokrzywa, F. S. Royster Guano Co., Toledo, Ohio; William Sondgeroth, The Garst Co., Coon Rapids, Iowa; C. E. Bream, Me-Jon Fertilizer, Inc., Oxford, Iowa; James Hickman, Farm Bureau Co-op, Columbus, Ohio; Donald H. Schmude, Texaco, Inc., Lockport, Ill., and F. B. Grant, Smith-Douglass Co., Inc., Streator, Ill.

Back row: Jesse C. Williams, Davison Chemical Division, W. R. Grace & Co., Joplin, Mo.; A. J. Kelly, Baugh & Sons Co. of Indiana, Inc., Rushville, Ind.; Ernest C. Bewersdorf, Texaco, Inc., Lockport, Ill.; Eugene Manthie, F. S. Royster Guano Co., Madison, Wis.; Philip C. Shugert, Farm Fertilizers, Inc., Omaha, Neb.; Charles Grimme, Farm Bureau Co-op, Columbus, Ohio; Mr. Mark; and Joe L. McRae, Texaco, Inc., Lockport, Ill.

Practical Solutions to Fertilizer Production Problems Covered in Safety School Series

CHICAGO—Stressing safety, not only with a capital "S" but with capital letters throughout as the basic need for the success of any industrial operation, the second of a series of five "Safety Schools" conducted this year by the Fertilizer Section of the National Safety Council in cooperation with the National Plant Food Institute, was held here Aug. 16-17.

In attendance were plant supervisors from the midwest region comprising the states of Illinois, Indiana, Wisconsin, Michigan, Ohio, Iowa, Kentucky, Missouri, Minnesota, Kansas, Nebraska and both Dakotas. A similar school was held in New York City earlier this month and the remaining three are scheduled for: Wilmington, Del., Aug. 25-26; Fresno, Cal., Oct. 25-26, and New Orleans, La., Nov. 8-9.

Although the school was of only two days duration, it was a jam-packed affair with eight instructors taking their turn at the podium in addition to participating from the floor in the question-and-answer periods following the formal presentation of each individual topic.

Emerson M. Jones, supervisor, Midwest Technical Service, Nitrogen Division, Allied Chemical Corp., Indianapolis, Ind., served as director of the short course.

Assisting Mr. Jones were the following: W. C. (Billy) Creel, safety director, Department of Labor, State of North Carolina, Raleigh, N.C.; M. E. Petersen, R. M.

(Turn to **SAFETY**, Page 23)

Cyanamid to Up Phosphoric Acid Output

Multi-Million Dollar Addition Set For Florida Plant

NEW YORK — Plans to double American Cyanamid Co.'s production of wet-process phosphoric acid were announced by Dr. Wilbur G. Malcolm, president.

A multi-million dollar addition will be made at the company's Brewster, Fla., plant to handle the increased production, Dr. Malcolm said.

The Brewster plant is located in the heart of the Florida phosphate pebble field. With the planned addition, the plant will be capable of producing approximately 400,000 tons of wet-process 54% phosphoric acid annually.

"During the past 15 years," Dr. Malcolm said, "the use of fertilizer has tripled. We expect it to double or triple again within the next 25 years. Cyanamid has been a principal supplier of basic agricultural chemicals to other manufacturers. Our present expansion is part of our continuing program to maintain this position."

Use of phosphoric acid in high-analysis fertilizer has been gaining wide acceptance since early 1957. Dr.

(Turn to CYANAMID, page 2)

F. S. Royster Guano Offers to Purchase Louisville Firm's Stock

LOUISVILLE, KY. — The F. S. Royster Guano Co., Norfolk, Va., has offered to buy all outstanding stock of the Price Chemical Co., Louisville, it is learned.

A spokesman said there are 5,000 shares of $20 par stock, for which the Norfolk fertilizer manufacturing concern has offered $60.70 a share, a total of $303,500.

"Under terms of the offer," it was explained, "90% of the shares would have to be placed in escrow with the Kentucky Trust Co. on or before Aug. 30.

"Royster Guano would then pay stockholders about $50 a share and put in escrow $10 a share, to be used to settle any claims against Price that might arise. After one year, the sum remaining would be distributed to those who had sold their stock."

Informed sources here pointed out that "Price Chemical is a closely held company. Most shares are in the hands of directors, officers and their families."

As noted, the stock is traded in the over-the-counter market here and was quoted this week at $12 a share bid. Brokers said the highest price at which the stock had been traded in recent years was about $22 a share.

The 41-year-old Price concern was founded in 1919 by John A. Miller, who is president, and the late W. N. Price. It is reported that the company has operated at a loss for two years and paid its last dividend July 1, 1958.

According to Charles F. Burroughs, Jr., president of F. S. Royster, no advance plans can be announced until the transaction is completed. However, he said, if things work out as proposed, his company would manufacture fertilizer under both the Price brand and the Royster brand.

F. S. Royster Guano Co. operates 23 plants in the eastern half of the U.S., with fertilizer distribution in most states east of the Mississippi except New England. The company has been in business for 75 years.

World Fertilizer Consumption, Production Continue to Rise, FAO Report Shows

WASHINGTON — World consumption and production of fertilizer continue to grow, according to "The Annual Review of Consumption, Production and Trade in Fertilizers," released recently by the Food & Agriculture Organization of the United Nations.

The FAO report goes on to say that there has been spectacular growth of the industry, which has almost trebled its level of operations in the last two decades.

During the six-year period (1953/54 to 1958/59) covered in the review, the increase in world output and use of fertilizers — and thus in world trade—has been maintained.

It adds that countries which use fertilizers heavily have continued to increase output and consumption. Many other "countries which used little fertilizer in the past have begun to expand consumption and some are now establishing new industries to supply their own needs."

The review says that production of the major kinds of fertilizers in 1958/59 was 24,300,000 tons and consumption at 22,980,000 tons, with trade at 6,300,000 tons.

The review also points out that—

- Of the three main plant nutrients, nitrogen showed the largest increase in production. Potash output also rose at a rapid rate, but production of phosphoric acid advanced more slowly.
- The biggest percentage rise in production and consumption of all fertilizers took place in Asia—66% in 1958/59 compared with 1953/54.
- European production of all fertilizers was 56.6% of the world total.
- Israel is planning the biggest rise in its production, adding 800,000 tons to its capacity.
- Consumption per 1,000 hectares of arable land was highest in New Zealand, 463.09 metric tons.
- Consumption per 1,000 hectares of agricultural land was highest in Belgium, 204.95 metric tons.

The review is based on data received by FAO from governments of nearly all the major fertilizer-producing or consuming countries up to Nov. 15, 1959. For others, "estimates have been made on the basis of best available information from unofficial sources."

More information was available from East European countries in recent years than in the past. Four of these, Bulgaria, Czechoslovakia, Hungary and Poland, replied to the FAO questionnaire on fertilizers. Unofficial estimates for some other east European countries are included, but all computed data exclude the USSR, mainland China and North Korea where data of known reliability were incomplete.

The review contains for the first time detailed information on international trade for the six-year period. Statistical tables have been increased

(Turn to FAO REPORT, page 22)

1959 Pesticide Production Tops Previous Year's Mark by 9%

WASHINGTON — The U.S. Tariff Commission has released its preliminary report on U.S. production and sales of pesticides and other organic agricultural chemicals in 1959. The report, ninth in a series on production and sales of synthetic organic chemicals in 1959, gives preliminary statistics for that year on pesticides by principal uses—fungicides, herbicides, insecticides, rodenticides, soil conditioners, and soil fumigants.

According to the report, U.S. production of pesticides and other organic agricultural chemicals in 1959 amounted to 585 million pounds—about 9% more than the 539 million pounds reported for 1958. Sales in 1959 were 502 million pounds valued at $225 million, compared with 467 million pounds, valued at $196 million, in 1958.

The output of cyclic pesticides and other chemicals included in the cyclic group amounted to 469 million pounds in 1959—about 5% more than the 445 million pounds produced in 1958. Sales in 1959 were 410 million pounds, valued at $172 million, compared with 378 million pounds, valued at $148 million, in 1958. The chemical in this group which was produced in the greatest quantity in 1959 was the insecticide DDT. The output of this product in 1959 amounted to 157 million pounds, a record high.

Production of acyclic pesticides and other acyclic organic agricultural chemicals in 1959 amounted to 116 million pounds, compared with the 95 million pounds reported for 1958; sales in 1959 were 93 million pounds, valued at $52 million, compared with 89 million pounds, valued at $48 million, in 1958.

The statistics on production and sales in the commission's preliminary report on pesticides and other organic agricultural chemicals are virtually complete. Complete statistics will be given in the commission's final report on production and sales of synthetic organic chemicals in 1959, which will be issued later this year.

Highest Pyrethrum Tonnage Licensed

NAIROBI, EAST AFRICA — The Pyrethrum Board of Kenya is licensing about 10,300 tons of Kenya pyrethrum production for the year which commenced July 1, 1960. According to the board, this is the highest production figure ever licensed.

Production in the 12 months ending June 30, 1951, was 4,100 tons and production in the last production year, ending June 30, 1960, will probably reach 6,300 to 6,400 tons, the board said.

Preliminary marketing indications suggest that there is every possibility that the coming year's production will be fully absorbed.

Smith-Douglass Buys $2.6 Million Ammonia Plant in Houston

NORFOLK, VA — Smith-Douglass Co. has successfully bid for the San Jacinto Ordnance Depot ammonia plant in Houston, Texas, announced the General Services Administration, which sold the unit. The sale price was $2.6 million.

The facility, which Smith-Douglass has been leasing since 1953 when the company and the San Jacinto Chemical Co. merged, is capable of producing 110 tons of ammonia a day.

According to the GSA, Smith-Douglass Co. was the only bidder for the plant, but the Houston Ship Channel Navigation District had submitted a bid of $8 million for the complete San Jacinto parcel, which included the plant.

The plant was built by the government during World War II as a means to meet the country's ammonia needs during the war.

David White is manager of the San Jacinto plant for Smith-Douglass.

Tunisia Reveals Plans for New Super Facility

TUNIS—Plans for the construction of a new triple-superphosphate plant at the port of Sfax, Tunisia, have been announced.

The new plant, to be constructed by a Swedish contracting firm, is part of a national step to convert Tunisia's economy into an industrial one, a spokesman said.

The plant will be financed entirely by the Forenade Corp. of Sweden and will more than double Tunisia's production of triple-superphosphate.

According to Azzedine Abbassi, state secretary for industry, the new plant, in its initial operations, will transform 170,000 tons of phosphate rock into 100,000 tons of triple-superphosphate annually.

He said that the total financing by the Swedish firm will mean a "considerable increase in Tunisia's hard-currency income." Profit-sharing arrangements provided by the contract were not disclosed.

Ahmed Mestiri, state secretary for finance, said "Tunisia is trying to encourage transformation of raw materials here at home and is appealing for foreign capital to help."

Cost of the plant has been estimated at $16 million. The only existing plant for triple-superphosphate production is also at Sfax. It is operated by a French firm.

State's Plant Food Use Deficit Noted At Southwest Fertilizer Conference

GALVESTON, TEXAS—That fertilizer use in Louisiana would be increased almost threefold "if harvested crop acreage were increased to a reasonable three and one-half million acres and farmers were to follow minimum fertilizer recommendations," was pointed out to some 260 industry representatives, college personnel and state control officials attending the 1960 Southwest Fertilizer Conference at Galveston, Texas, July 27-30.

According to Dr. M. B. Sturgis, head of the department of agronomy at Louisiana State University, the state had a deficit of over 31,000 tons of plant food nutrients in 1959, when considering the tons of nutrients removed by all crops and pastures as against the relatively small amounts returned to the soil in the form of fertilizers. If more recognition were given to this type of calculating, the use of fertilizer would increase greatly in the state, it was indicated.

Other speakers were representatives of the National Plant Food Institute, experiment stations from the states involved in the conference, a banker, a sales promotion expert, and various extension people.

W. R. Allstetter, vice president of the National Plant Food Institute, Washington, D.C. and Dr. R. L.

(Turn to CONFERENCE, page 22)

"WE HAVE BUT TWO PRODUCTS . . . POTASH AND SERVICE"

ROBERT BILLINGS
as a P.C.A. Sales Representative, covers the states of Iowa, South Dakota, Nebraska, Kansas, Oklahoma, and Colorado. A graduate of the Missouri School of Mines, he is a member of the American Institute of Mining Engineers.

DENNIS ROBERTSON
was appointed P.C.A. Sales Representative for Florida in 1958. A graduate of the University of Virginia, he has had wide sales experience, spending a number of years in the fertilizer industry in the south-eastern states.

Your Men on our payroll

These men are two of the members of the P.C.A. sales team serving the fertilizer industry. While they are on our payroll, their chief responsibility is to you. Selling potash is but part of their job; the most important part is furnishing you with whatever service and information you require . . . both have the experience and background to do the job well. The P.C.A. salesman is your man . . . make good use of him.

P.C.A. The SALT of the EARTH RED MURIATE

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Canadian Urea Plant Utilizes Waste Products from Steel Mill

CANADA's first facility for the manufacture of urea is owned and operated by Cyanamid of Canada, Ltd., a subsidiary of American Cyanamid Co. The facilities, on stream for about a year, obtain raw materials from the neighboring steel mill of Dominion Foundries & Steel Co. and having removed hydrogen and carbon dioxide from the gases, pipe the remaining gas back to the steel mill where it is utilized as heating fuel.

Cyanamid of Canada's urea facilities are built on reclaimed ground on Hamilton Harbor, presenting convenient shipping facilities via the St. Lawrence Seaway, to many marketing areas in both Canada and the United States. (The general plan of the urea facilities may be followed on the drawing presented with this article.)

The plant has a rated production capacity of 66,000 tons of urea annually. Anhydrous ammonia is produced at the rate of some 52,500 tons annually, with most of it being utilized in the production of urea and approximately 12,000 tons available for other purposes.

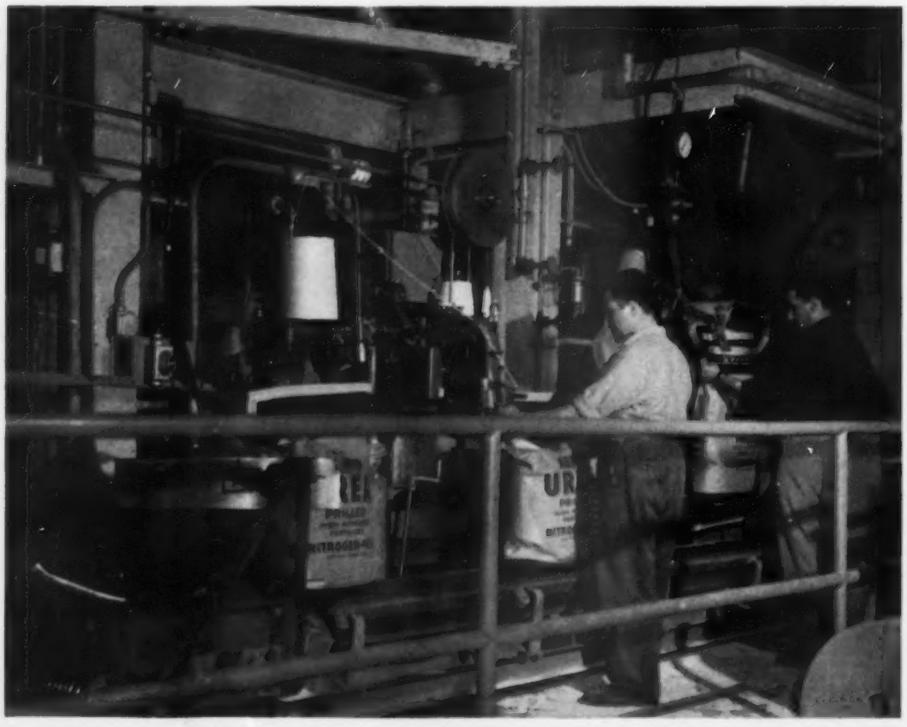
Located on the shores of Hamilton Bay, an important St. Lawrence Seaway port, the plant occupies about 20 acres of land reclaimed by filling a section adjacent to Dominion Foundries and Steel, bringing the urea unit as close as possible to its source of raw materials.

Urea is produced in some 240 miles of enclosed

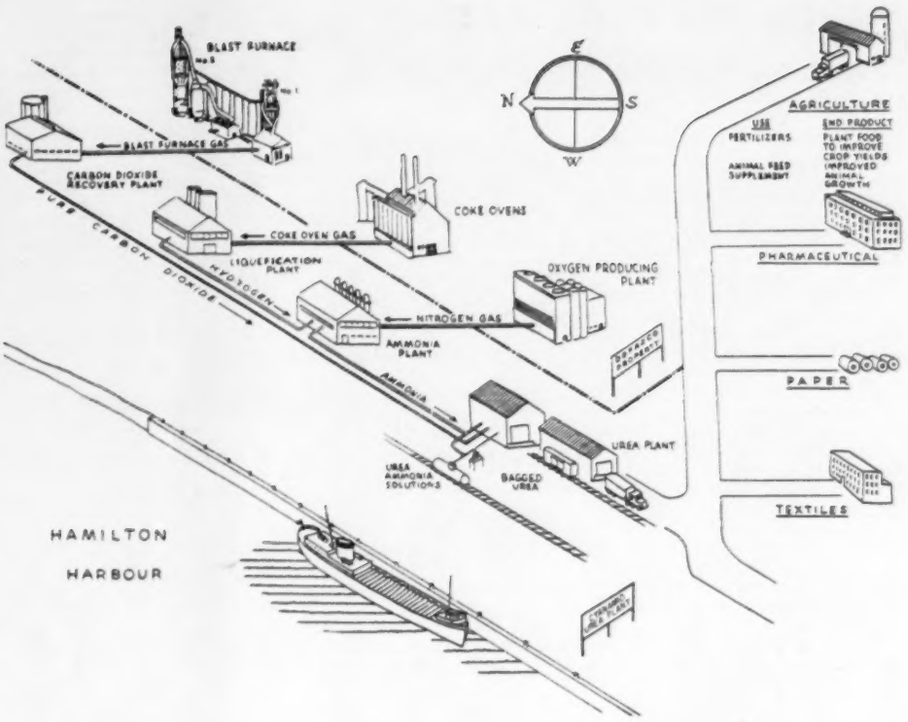
PHOTOS ON THIS PAGE

NERVE CENTER—Above is view inside control room of Cyanamid of Canada operation at Hamilton Bay, Ontario. Recording and regulating devices control some 240 miles of enclosed pipes and vessels, with every process recorded and regulated automatically.

Below is view of Cyanamid's bag-filling department at Hamilton Bay. The facility produces some 66,000 tons of urea annually, with the larger portion of this production being destined for agricultural use as source of nitrogen in fertilizers and as animal feed supplements. At this bagging station, urea emerges from hoppers and is packaged for shipment in Canada, the United States and overseas.



FACILITIES DIAGRAMMED—At right is outline drawing of Cyanamid of Canada's urea production facilities at Hamilton Bay, Ontario. Gases obtained from Dominion Foundries and Steel Co. mill close by are utilized by Cyanamid in the latter's production of urea. End use of the plant's products in addition to urea's use as a source of nitrogen for fertilizers, include the pharmaceutical, paper, and textile industries.



pipes and vessels, with every process automatically recorded and controlled.

A key step takes place in two autoclaves, 54 inches in diameter and 44 feet long. Within these, ammonia and carbon dioxide are combined under heat and pressure, creating highly corrosive conditions which of course had to be protected. To accomplish this, the interiors of the autoclaves were coated with silver, said to be the world's largest silver-plating application.

According to Dr. L. P. Moore, president of Cyanamid of Canada, Ltd., the plant serves a growing market for urea in both Canada and the United States.

"Its location places it directly on the Great Lakes and Atlantic shipping lanes and near major railroad centers of both Canada and the United States," he said. "In addition, it is within a short distance of our Welland plant at Niagara Falls, a location at which we propose to make use of a good amount of the excess ammonia."

The bulk of the urea produced is expected to go into agricultural use as a high nitrogen content fertilizer and as an animal feed supplement.

Cyanamid of Canada, Ltd. has its headquarters in Montreal, Que. and also operates two plants in Niagara Falls and one at Beachville in Ontario, as well as at Montreal and St. Jean in Quebec.

NETWORK—Through this network of pipes (below), waste gases from the Dominion Foundries & Steel Co. mill are pumped into the new Cyanamid of Canada urea plant. Quantities of hydrogen and carbon dioxide—raw materials for urea production—are extracted and the gases are pumped back into the mill over this same network for re-use as a heating fuel.

Despite Increased Farm Production Hunger Still World Problem, 7th Soil Science Congress Told

MADISON, WIS. — Despite increased agricultural production, hunger remains the greatest threat to the future of mankind, some 1,500 scientists attending the seventh International Soil Science Congress, held at the University of Wisconsin here Aug. 15-23, were told.

Dr. Richard Bradfield, head of the agronomy department at Cornell University and president of the soil scientists' society, told the researchers from about 50 nations that unless something is done to curb the rate of population growth, increased agricultural production "can only delay the day when population will greatly exceed the food supply."

"Agriculturists have had more experience and more success in increasing food production than population experts have had in population control," he said. "For this reason, we may have to carry a major part of the responsibility for the better-fed world for the next 25 years."

Dr. Bradfield said that increased food production in the immediate future will probably have to come from lands now under cultivation. He noted that while one billion acres in the humid tropics seemed to have the greatest potential for expansion in food production, a continuous growing season with plenty of sun and rain had left an acid soil surface, reducing the effectiveness of commercial fertilizer.

Other phases of soil nutrition and soil testing were covered by speakers on the program. A. C. Caldwell, University of Minnesota soils expert, told the group that corn plants take up fertilizer phosphorus more rapidly when the fertilizer also contains nitrogen in ammonium form. He said the principle holds true both when ammonium compounds and superphosphate are mixed together and when some nitrogen is chemically combined with the phosphorus, as in ammonium phosphate.

He emphasized, however, that applying the two plant nutrients at the same time, but separately, does not affect phosphate usage.

Dr. Caldwell and his co-workers had mixed ammonium nitrate with radioactive superphosphate and applied the combined fertilizer as a starter on one set of corn plots at planting time. On another set of plots, they applied the radioactive superphosphate and ammonium compounds separately — one on one side of the plant and one on the other.

Geiger counter checks showed that in early growth, both where the two compounds were mixed together and where ammonium phosphate was used, about 60% of the phosphorus in the plant came from the fertilizer.

Where the two compounds had been applied separately, the fertilizer accounted for less than 25% of the phosphate in the corn plant.

The principle also held true with ammonium sulfate and ammonium chloride; both affected phosphate uptake only when the two compounds were mixed, the speaker said. However, nitrogen in the nitrate form—calcium nitrate and sodium nitrate—did not increase phosphorus absorption even when mixed.

Soil samples that are dried before they are tested for potassium may show larger amounts of potassium available to plants than is present in moist soil, A. D. Scott, Iowa State University agronomist, reported. He said potassium not available to plants in the moist soil may be changed to an available form as the soil is dried. Thus, tests of dried soil may not present a true picture of the available potassium of soils in the field.

Mr. Scott pointed out that soil samples are generally dried in soil testing laboratories before tests are made for exchangeable potassium—that is, potassium that can be used by plants. But, determining the amount of exchangeable potassium in the soil from moist rather than dried samples, would give closer indication of the potassium available to plants.

Moist soils are not easily handled in soil testing laboratories, the speaker said. Most samples received for analysis are already dry. Wetting the dry soil that comes in and then running the tests does not give the same results as running tests on soils that have not had their moisture removed.

Information on the processes involved in the increase of exchangeable potassium when soils are dried is still lacking, Mr. Scott told the group. However, research is being conducted so that soil tests may be improved, he added.

IMC Schedules More Fall Training Clinics

SKOKIE, ILL. — Another series of fertilizer training clinics—featuring technical service and production problems—has been scheduled this fall by International Minerals & Chemical Corp.

The clinics will follow the same pattern as the sales training clinics conducted by IMC last year as a feature of its Full Orbit customer service program.

Production training meetings will open Oct. 24-25 in Minneapolis, and conclude Dec. 14-15 in Jackson, Miss. Other dates for the two-day meetings will be: Indianapolis, Oct. 26-27; Baltimore, Nov. 9-10; New York City, Nov. 14-15; Raleigh, N.C., Nov. 16-17; Toledo, Ohio, Nov. 21-22; Winter Park, Fla., Nov. 28-29; Montgomery, Ala., Nov. 30-Dec. 1; Kansas City, Mo., Dec. 5-6, and Tyler, Texas, Dec. 14-15.

Northeastern Fertilizer Conference Set

HERSHEY, PA. — Program plans for the Northeastern Fertilizer Conference to be held at the Hotel Hershey here on Sept. 29-30, have been announced.

Highlights include discussions on "The Non-Farm Fertilizer Market in the Northeast," with C. R. Skogley, University of Rhode Island; Dr. J. C. Harper, Pennsylvania State University; Joseph Troll, University of Massachusetts; H. H. Iurka, New York Department of Public Works; E. F. Button, Connecticut State Highway Department; C. F. Winchell, Consolidated Rendering Co., and A. E. Buter, Allied Chemical Corp., taking part.

The second day will cover "Meeting the Challenge of the Next 10 Years," and will feature H. B. Sharer, U.S. Rubber Co., and Dr. Hector Lazo, New York University.

Elected President

NASHVILLE, TENN. — Hunter Woods has been elected president of the Rigo Chemical Co., Nashville, succeeding Jack C. Massey. Mr. Woods was formerly general manager.

With his election, Mr. Woods also became a part owner of the 57-year-old firm which manufactures a line of insecticides under the "Kill-Ko" label.

CROP VALUES

SACRAMENTO — The gross value of agricultural production reported to the California Department of Agriculture for 1959 totals $3,602,758,000, according to the department's Bureau of Agricultural Statistics.

The report, compiled from data furnished by county agricultural commissioners, shows the value of field and seed crops was $1,027,529,000; livestock and poultry $1,144,096,000; fruit and nut crops $807,997,000; vegetable, melon and potato crops $501,139,000; nursery, cut flowers and miscellaneous crops $121,997,000.

Canada Association To Hold Agricultural Chemicals Meeting

MUSKOKA, ONT. — The Eighth Annual Meeting and Conference of the Canadian Agricultural Chemicals Assn. will be held Sept. 12-14 at the Britannia Hotel here, announced Michel Chevalier, association general manager.

Included among the speaking highlights will be addresses by Douglas S. Harkness, Canadian federal minister of agriculture; Dr. F. Glen, director general, research branch, Canada Department of Agriculture; Dr. A. W. A. Brown, head, department of zoology, Western University; George Garrett, vice president, Carbide Chemicals Co.; Don Henshaw, MacLaren Advertising Co., Ltd., and Louis F. Czufin, California Spray-Chemical Corp.

Two panel-type discussions have also been planned.

Social activities including golf, banquet and dance, are also scheduled.

USI Expands Storage Capacity at Illinois Plant

NEW YORK — Ammonia production capacity has been increased by 17%, and anhydrous ammonia storage capacity will be expanded by U.S. Industrial Chemicals Co., division of National Distillers and Chemicals Corp. at its Tuscola, Ill., plant.

Paul J. LaMarche, U.S.I. director of production, reports that the plant is already operating at the expanded rate of 70,000 tons per year (up from 60,000 tons) and a new 6,000 ton storage facility is expected to be in full service by the end of the year.

The 6,000 ton storage tank will use the relatively new principle of storing refrigerated ammonia at atmospheric pressure, rather than storing it in pressurized tanks at moderate temperatures. The storage vessel consists of an inner tank, 88 ft. in diameter and 56 ft. high, separated from an outer tank by 2½ ft. of insulation. Liquid ammonia is stored in the tank at a temperature of about minus 28° F. and this low temperature is maintained by evaporation of ammonia from the surface. The evaporated ammonia is then used as feed stock for the adjoining ammonium nitrate unit. It can also be recompressed and recirculated to the tank if necessary.

CPA Buys Plant

ROYSTON, GA.—Cotton Producers Assn. has purchased a fertilizer plant in Royston, according to an announcement by J. E. Nunnally, director of CPA plant food services. The plant was formerly owned by Hoke McConnell, McConnell Co.

The plant will manufacture from 12,000 to 15,000 tons of plant food annually, and grades needed for fall application are already being manufactured.

Paul David will serve as manager of the Royston plant and will also continue as manager of CPA's fertilizer plant in Athens.

Farmers Fertilizer Buys Oklahoma Firm; Corporation Formed

TEXARKANA, TEXAS — The Farmers Fertilizer Co. of Texarkana bought the Nichols Fertilizer Co. at Oklahoma City, Okla. and is now in the process of reactivating the plant for production of granular superphosphate and granular mixed grades of fertilizer and should be in production for fall business.

A new corporation, Farmers Fertilizer Co., was formed and the active officers are Harold Trammell of Texarkana, president, and George Summers, Jr., of Oklahoma City, vice president and sales manager.

Mr. Trammell has been actively engaged in the manufacture of fertilizer for 31 years and has owned and operated the Farmers Fertilizer Co. in Texarkana, which he built 11 years ago. This plant produces superphosphate and granular mixed fertilizers. Mr. Trammell was associated with Shreveport Fertilizer Works, Shreveport, La., as manager of its plant at Gilmer, Texas, before moving to Texarkana, in 1949. He has also been active in the Texas, Oklahoma and Arkansas educational plant food societies.

Mr. Summers graduated from Oklahoma State University in 1948, majoring in agronomy. He taught on the Veterans Agricultural Training Program for a year before joining the agricultural division of the American Cyanamid Co. in 1949. Mr. Summers served the fertilizer and insecticide industry in Oklahoma, Texas, Kansas and Missouri during the 11 years he was with American Cyanamid Co. He is a past president of Oklahoma Plant Food Educational Society, has been recognized for outstanding achievement in the field of agronomy by the agronomy department, Oklahoma A&M College and awarded the degree of honorary state farmer by the Oklahoma Future Farmers of America.

Solutions Group Plans Annual Meeting

CHICAGO—The 1960 Annual Convention of the National Fertilizer Solutions Assn. is scheduled for Nov. 9-11, at the Peabody Hotel in Memphis, Tenn., according to Muriel F. Collie, executive secretary.

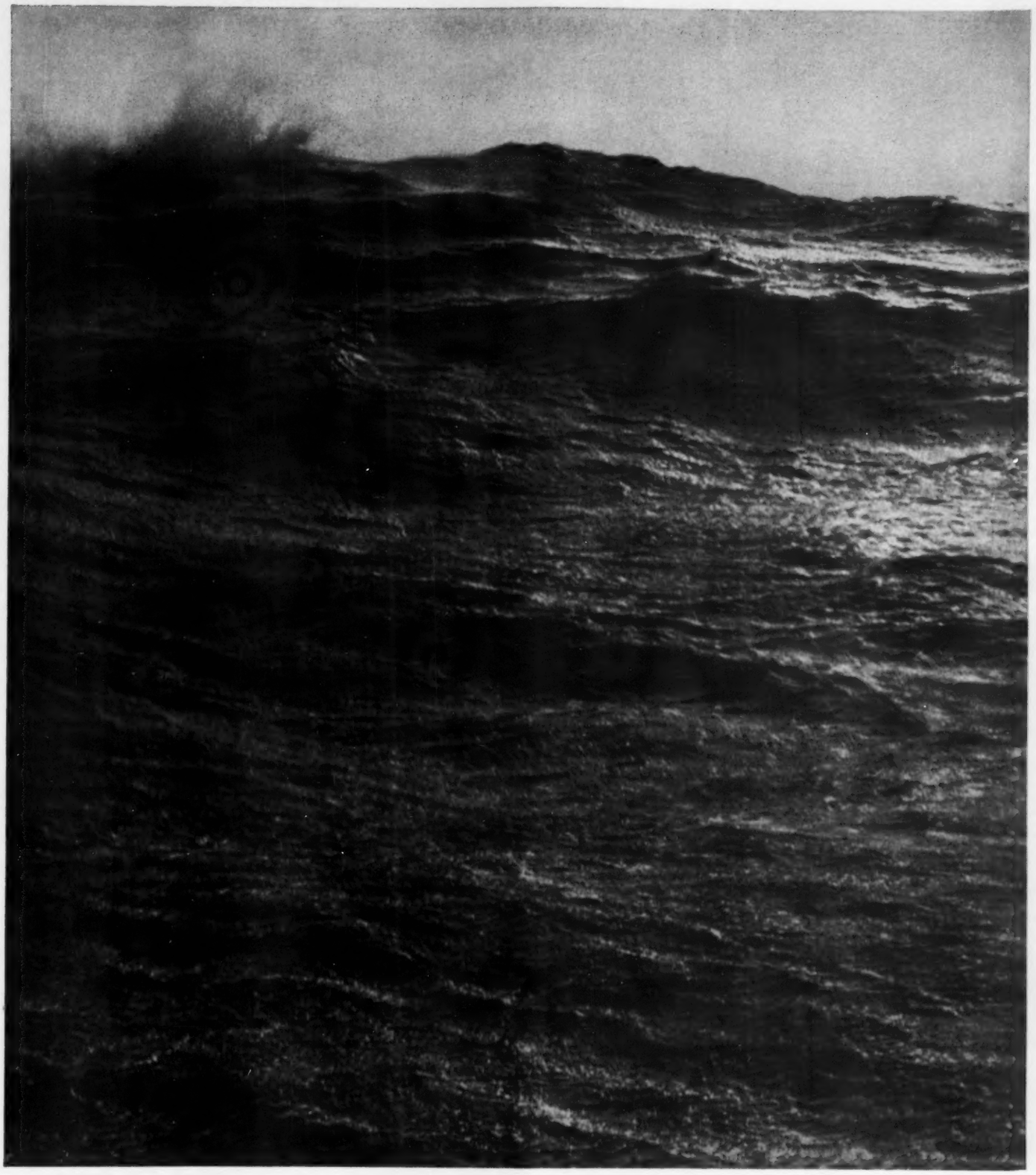
Speakers scheduled for the meeting, include Earl C. Nightingale, who will discuss "Management's Strangest Secret."

Industry speakers will cover many facets of product promotion. Robert C. Lemler of Aylco Corp., Sullivan, Ill. will speak on "Selling the Farmer;" F. E. Hartzler of Kansas State Teachers College on "Management Practices," and panels will review "Engineering Departments, Old and New," "Water Soluble Phosphates," and "Ten Years of Liquid Fertilizer." The men who will serve on this panel are: Morris T. Woosley, West Kentucky Liquid Fertilizer Co., Hopkinsville, Ky.; Dr. John L. Strauss, Ris-Van, Inc., Belmond, Iowa; Dean R. McHard, Kaw Fertilizer Service, Lawrence, Kansas, and Dermont Galbraith, Agriform of Northern California, Woodland, Cal.

June Inorganic Report

WASHINGTON — The Bureau of the Census, Department of Commerce, announced preliminary figures on the June production of inorganic chemicals in the U.S.

Synthetic anhydrous ammonia totaled 407,907 short tons, slightly less than the previous month. Ammonium nitrate totaled 208,670 tons, down from May. Nitric acid production amounted to 234,603, or less than the month before. Phosphoric acid output was 171,230 tons, also less than May. Sulfuric acid production was 1,495,438 tons; much less than the May total.



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Storage, Handling, Shipping Of Bags Important in Plants

BOTH PESTICIDE and fertilizer manufacturers have substantial investments in packaging machinery and in multiwall bags. Maintenance and protection of both are important items on any plant manager's agenda, and the problem extends beyond the plant itself into considerations of protecting bagged goods being shipped in railway cars and trucks.

Some valuable tips on storage of empty multiwall bags, proper handling of filled bags, loading of boxcars and trucks, and a glossary of types of bags used in the trade are contained in a recently-issued booklet* by Bemis Bro. Bag Co., St. Louis.

*Name of booklet: "Bemis Multiwall Packaging Guide."

In storing empty multiwall paper bags, the booklet says, facilities should be available to allow the bags to maintain a moisture content of about 6 or 7%. At that degree of moisture, multiwall paper bags are strongest and perform best. If the moisture in the paper is allowed to drop below normal the bags will become weakened and brittle. This condition can lead to expensive breakage on the packer, in handling and in shipping.

Paper bags are manufactured under conditions which give them the necessary moisture content at time of shipment. During shipment, however, they may lose some of their moisture because of low relative humidity, due to drafts of dry air in the cars, extreme dry heat or extreme cold, or a combination of these and other shipping conditions. Improper storage conditions, too, are often responsible for robbing bags of the moisture necessary to give them maximum strength.

After some experience with paper bags, it is not difficult for a plant manager to tell when they have become too dry. One simple way to determine this is to test the bags for "rattle." Shake the bags briskly. If the bags "rattle" sharply, they are too dry for best performance on the packer. They should be humidified before using.

This reconditioning can best be accomplished by storing them in properly humidified storage rooms so they may regain their normal moisture content. Paper bags which are in good condition should be similarly stored to maintain them at the proper moisture level.

Dried-out paper bags are one of the most common causes of trouble, and one easily avoided. Ideal storage conditions for keeping the proper 6 or 7% of moisture in paper bags call for a relative humidity of about 50% at warm temperatures.

Lifting and carrying filled bags, as well as proper handling on hand trucks and motor lift trucks, is another important matter. If just one man is picking up bags, he should be sure his hands are underneath the sack, preferably at diagonal corners. If two men are handling the bag, their hands should be under the four corners of the container.

Bags should never be gripped nor pulled at the corners. Nor should they ever be dragged across the floor. If the bag is a tied closure type, it should never be pulled at the closed end. Never lift or drag a sewn gusseted sack by inserting fingers in the gussets underneath the sewn ends or in valve openings.

Trucks, as well as chutes and conveyors, should be carefully inspected to be sure there are no protruding nails or splinters. Any protruding edges or points should be removed or covered with old burlap or similar protective material.

Two-wheel trucks should have wide, extended lips, since narrow-blade lips cut into the sacks. Wood or metal extensions should be added to narrow-blade lips.

Sacks should be piled by hand on two-wheel trucks and should always be placed flat. Never pick up a load of sacks by pushing the truck blade under the bottom sack in the pile.

Small wooden pallets may be used with a two-wheel truck if the lip of the truck is adequate. As many as ten sacks may be stacked flat on a pallet.

On pallets, filled sacks should be stacked flat and even with the edges, with the end sacks interlocked.

Loading railway cars and trucks is an important matter when it comes to breakage-free shipping. Here are some rules of thumb to follow:

When ordering cars from the railroads, insist on good equipment. Cars should be clean, dry, and free from protruding nails or other projections. They should have sound roofs, tight-fitting doors, smooth floors, sides and end walls. All dust and dirt must be removed from car walls, ends, floor and ceiling. The floor must be swept clean of all pebbles, grains, sand and grit. Pieces of crushed rocks, grains or grit under the side boards of the car should be removed, as they have a tendency to work out underneath the load. Grit or sharp pebbles may slit a bag as cleanly as a razor blade would.

Any loose boards in the car walls, ends and floor must be made tight. Loose nails should be removed. Loose bolts should be removed or heavily covered with cardboard or several thicknesses of car liner. A straight-edge board, four to six feet long and of one-half by six-inch material, is useful in locating protruding nails, etc.; draw it along the car walls in a perpendicular position.

Cover the car floors with a good grade of liner and put at least three thicknesses of paper on the door edges —or use cardboard sheets now available for this purpose. If the car is in poor condition, and it is to be loaded to the walls, the walls should be lined, also. Asphalt-laminated paper may be used to seal cracks in car doors as protection against dirt, rain, snow and cinders.

Loading

These rules should be observed:

1. The car should be loaded so that the filled bags will not come in contact with side doors.

   a. Use a good grade of dunnage in the doorway or steel strapping covered with corrugated board. This protects the load if there is any shifting in transit.
   b. Follow proper loading patterns.
   c. Use retaining strips of special pressure-sensitive tape applied across the load, or
   d. Use steel retaining straps covered by one thickness of corrugated board.

2. Bags should be loaded tightly, solidly and flat, to minimize shifting in transit.

3. Balance the load so there will not be more weight on one end or side than on the other end or side.

Somewhat the same rules apply to truck loading. Like railway cars, the truck should be free from all dirt and debris. If long hauls are involved or if truck bed is in bad condition, heavy "car-liner" paper should be used to cover the floor. In open, stake-side or enclosed trucks, the best way to load sacks is flat, with ends of bags parallel with sides of truck.

Bag ends on either sewn- or pasted-type bags offer some protection against abrasive action of truck sides. Bags should be protected against damage from protruding screw heads or other sharp objects and from racks and stake sides. Skid straps should be firmly fastened and tarpaulins should be used to protect bags in transit from rain and other poor weather conditions.

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Curtis A. Cox Named V-C Vice President

RICHMOND, VA.—Curtis A. Cox, general manager of fertilizer manufacturing at Virginia-Carolina Chemical Corp., has been elected a vice president of the firm.

Curtis A. Cox

The action, at a regular meeting of V-C's board of directors, gives the company six vice presidents in addition to Charles T. Harding, executive vice president. Mr. Cox has been with V-C 24 years, starting in 1936 as a shipping clerk in Selma, N.C. Later, he was promoted to acid foreman and transferred to Rome, Ga.

He has been assistant superintendent of V-C's plant at Charleston, S.C., and superintendent at Augusta, Ga.

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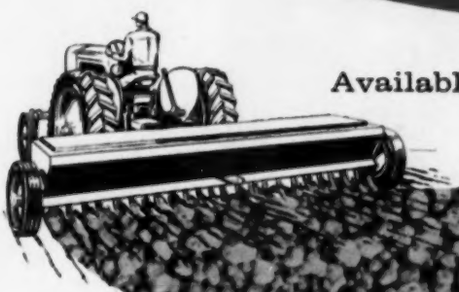

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Nitrogen Solutions, Are Profitable, Safe

By Emerson Jones
Nitrogen Division
Allied Chemical Corporation

NITROGEN solutions, if not handled properly, can be dangerous, but since we know the techniques and have available the necessary equipment to handle solutions safely, why do accidents continue? Perhaps this is caused by over-familiarity, carelessness or taking short cuts in operating procedure.

It could be that there are certain characteristics of nitrogen solutions that are not understood well enough. Plant managers are familiar with correct practices to follow, but as long as accidents are occurring while handling nitrogen solutions, there must be people who are not handling them safely.

Much has been said about personal safety equipment, but in my experience very little has been done about it. It is true that most plants provide their operators with protective equipment but rarely do they follow up and insist that their operating personnel use it. There is only one way to be certain that protective equipment is being used, rather than being lost or deteriorating so much from disuse that it would afford no protection if needed. That is to make it a policy that this equipment be used and/or maintained in a usable condition and, if it is not, that the negligent party will be held responsible.

The demands placed on protective equipment by nutrition solutions are not great. Nitrogen solutions do not have the strong caustic properties as do some of the other materials handled in the fertilizer plant, such as sulphuric acid or anhydrous ammonia. If a man's skin is sprayed with solutions, generally nothing more than a slight reddening or at most a superficial burn results if the solution is washed off.

However, the most vulnerable portion of the body is the eyes. If a man catches a full blast of solution in the eyes, the probability of some permanent damage is great. Accordingly, the operator should be provided with a good set of goggles or a full face mask, if he is working in an area where gauge glasses might break or a line may rupture.

Connecting and disconnecting tank cars provide a different set of circumstances. Here, generally, the men are working in rather limited space, high above the ground, and with somewhat limited exit facilities. Full safety equipment should be provided for two reasons—the first, of course, as protection against contact with the solution, and the second, in order to prevent panic which may result in a fall causing injuries more serious than those caused by contact with the solution.

In this case, the men should be provided with full face gas masks as protection from the solution and the vapors, gauntlet type chemical resistant gloves and a chemical resistant apron. A long sleeve cotton shirt is recommended to cut down on the skin area exposed. Make sure that this safety equipment is in good shape through frequent inspections. Periodically, replace the gas mask canister even though it may not have been used in an ammonia atmosphere. An experienced man can easily panic if he suddenly finds that the gas mask he has been trusting and relying on suddenly fills up with ammonia gas. Be sure the men know how to use the mask.

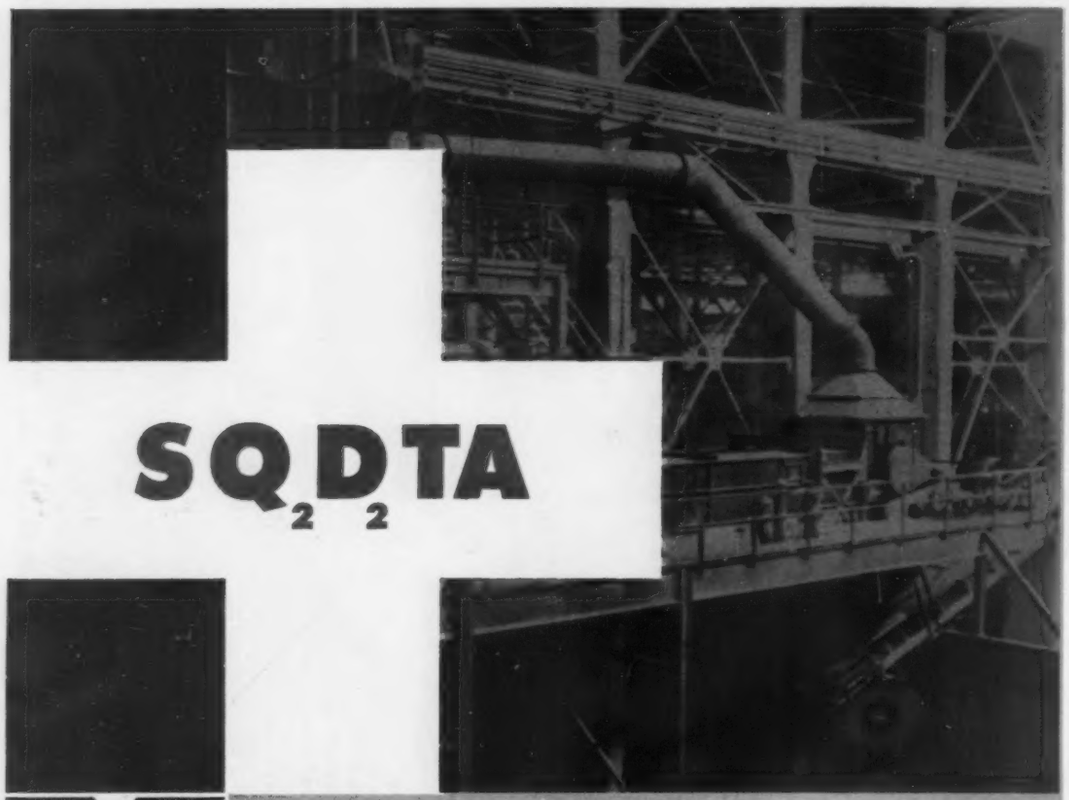
Earlier the plural "men" was used when referring to connecting and disconnecting tank cars. This is important. This task should always be undertaken by a team of two men, provided with identical safety equipment. Ordinarily, the job of connecting or disconnecting a tank car does not require the services of more than one man but the second should be there to help the man on top of the car in case an emergency develops. Ideally, he should be stationed on the ground with a fire hose so that, in the event of a broken connection, he could direct a stream of water on it, minimizing the danger.

Occasionally, we receive reports of a railroad switching crew hooking up to a loaded tank car that is connected and being used in process, pulling it out, breaking the hose connections, and having the solution spew madly throughout the area. Why more people have not been seriously injured when this happens, I do not know, but all the requirements of a sericus accident are present. This can be avoided.

Place a "tank car connected" placard and a derail device ahead of the car before it is connected. Make sure that the brakes are set on the car. Don't allow the car to remain connected to process and the valves on the car open when not in use. If you are operating at night, make sure that the area around the car is well lighted so the switching crew can see that the tank car is connected.

Make sure that the tank car is completely disconnected and ready to go before issuing instructions to the switch crew to pull it out. Understandably, it is not a pleasant task to shut the valves on a tank car while a hose under 40 to 50 lb. pressure is whipping madly and spraying solution in all directions. Needless to say, if it were a tank car of acid or ammonia, one would really have a wildcat by the tail.

Failure of equipment used within the plant to handle nitrogen solutions is a potential hazard. The solution system should be constructed of the best materials available. Recommendations of the solutions supplier should be followed to the letter, but even then allowances should be made for the possibility of failure. Such a preventive maintenance pro-



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gram can then become an accident prevention program as well.

When checking equipment, one should keep in mind certain inherent characteristics of nitrogen solutions and should obtain equipment that will permit safe operation under all conditions. Nitrogen solutions are corrosive to a number of common construction materials, and such materials should of course be avoided. For instance, carbon steel should not be used for nitrogen solutions handling systems. There are other more satisfactory materials available, including aluminum and aluminum alloys, stainless steels including types 304 and 316, rubber, neoprene, polyethylene, vinyl resins and glass. Among the materials destroyed rapidly and to be avoided under all circumstances are copper, brass, bronze, monel, zinc, galvanized metals, usual die castings, concrete and most alloys that may contain any of the above materials.

Another characteristic of nitrogen solutions that is sometimes overlooked when designing equipment is that upon evaporation nitrogen solutions leave a salt residue. For example, when choosing pressure relief valves, one should choose a type that if solution should enter it and a salt deposit remains, the valve will still operate. Pressure relief valves should be operated periodically to make sure they are functioning.

Hoses are subjected to extra rough treatment, deterioration and high pressures, so one should never compromise on hose quality. If a plant is using high pressure nitrogen solutions, anhydrous ammonia hose should be considered. Quite often it is difficult to see a weak place or a break in a hose during normal inspection, and unless a plant is equipped to make hydrostatic tests on hoses, they should be replaced periodically even though they may appear to be sound.

Valves and fittings must also be watched closely. Aluminum will not tolerate the hard use that carbon steel and stainless steel will. Therefore, in aluminum installations, it is recommended that stainless steel valves be located at critical points such as on the storage tank, and stainless steel threaded connections be used wherever the line will be connected and disconnected quite often.

If diaphragm type valves are used, inspect and replace the diaphragms regularly. By doing this, one can possibly avoid subjecting a man to the hazards of replacing a ruptured diaphragm while the system is full of solution and under pressure. Provide your unloading hoses with bleed valves or design your system so that the operator can safely bleed off the pressure before disconnecting. Too often, particularly inexperienced operators, will attempt to break a hose connection without relieving the pressure and end up with their eyes full of nitrogen solution.

The preceding points are mainly concerned with the day-to-day practices involved in the handling of solutions. There are some other areas which might be termed "exceptional cases" where the hazard can even be much more severe.

The first that comes to mind is this business of either welding or using a cutting torch on equipment, particularly steel, that has been in nitrogen solution service. This is serious business. There have been several cases which resulted in or could have resulted in serious injury and possibly death.

The first involved a steel storage tank that developed a leak in the upper portion. The tank was about half full of solution but nevertheless the operator attempted to make a repair weld on the outside of the tank. Shortly after starting the weld, it was noticed that the tank was heating up further from the weld area than would normally be expected and the pressure relief valve opened allowing dense fumes to escape. The welders immediately got off the tank and called the local fire department.

By the time the fire department arrived the tank was getting red. Fearing an explosion, everyone was afraid to approach the tank. Finally the fire department did manage to get a stream of water on it and by this time the tank was red hot above the solution level. Through either the cooling effect of the water being played on the tank or the material in the tank burning itself out, the situation was brought under control before the tank had a chance to explode. Luckily it was not the case here, but this could have easily had disastrous consequences. Let's analyze what probably happened in this case.

As solution is being used from a tank and the level in the tank drops, the solution clinging to the side of the vessel will evaporate causing ammonium nitrate to be deposited. Sufficient heat will cause ammonium nitrate to decompose in a salf-sustaining reaction. The decomposition itself is a relatively slow reaction but the fumes evolved can soon build up tremendous pressures particularly if confined in a space. Since ammonium nitrate does have a self-sustaining decomposition and a separate oxygen supply is not required, it is impossible to smother this type reaction. The only way to stop it is to cool the ammonium nitrate adjacent to the decomposing ammonium nitrate to a point where the heat supplied by the decomposing ammonium nitrate will not be sufficient to raise the unreacting ammonium nitrate to its decomposition point.

In this case the welding started the decomposition going and it kept going until there was no more salt left to decompose. Probably the ammonia escaping from the solution in

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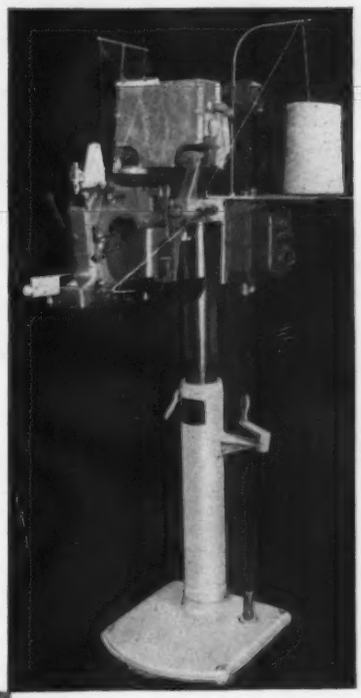

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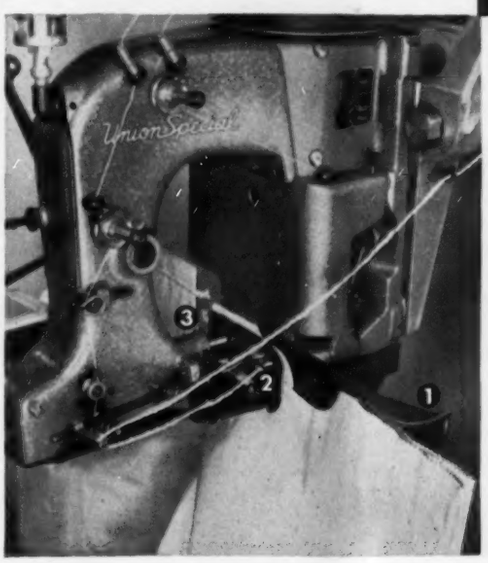

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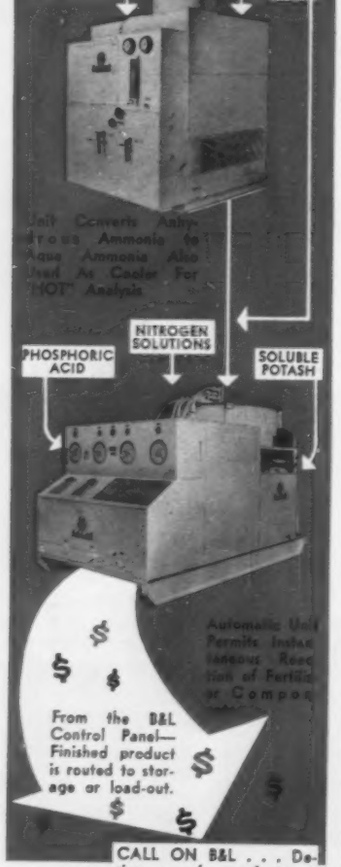

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the tank cooled the solution surface sufficiently to prevent the ammonium nitrate in the solution from entering into the reaction. It was fortunate that the pressure relief valve was working or a terrific explosion might have resulted.

The next example involves an abandoned steel pipe that had been in solution service. The pipe had been part of a steel tank system in which the tanks had failed and were replaced with aluminum tanks. At this time most of the steel pipe was removed and repiped with aluminum. All of the steel pipe had been taken down with the exception of about a 25 ft. length which was permitted to hang in its original location along the tank car unloading platform. The air line ran immediately above the solution line.

Approximately three years later, during the winter, the air line froze and in an effort to thaw it, a laborer took a bucket filled with waste, ignited it, and set it under the air line. It so happened that the abandoned solution line lay directly in the flame. The laborer then left the platform area and proceeded to carry out a task in another part of the plant. Shortly after, there was a terrific explosion.

Later, it was found that the abandoned solution line had exploded tearing out about a 2 by 5 ft. section of expanded metal grating walkway on the unloading platform and a piece of shrapnel from the exploded line traveled approximately 150 ft. and severed an anhydrous ammonia unloading hose. Approximately 3 ft. of pipe had been completely shattered. Again, in this case, luckily no one was in the area and there were no injuries.

In the next example the occurrence was quite similar, only men were in the immediate area. In this case an abandoned steel solution line was pulled off the scrap pile and brought in the machine shop to be cut into short lengths as rollers for moving some heavy equipment.

Two mechanics were using torches to cut off the desired lengths, when there was a terrific explosion. Needless to say the two mechanics were very critically injured and a third, standing across the shop was blown about 10 ft. against the wall by the explosion.

In both of the preceding cases the lines involved in the explosion were open at least at one end. However, the line must have been plugged to cause the explosion. There are two possible explanations for this. Either the line had corroded while lying idle to the extent that the products of corrosion plugged the line, or the salts deposited inside the line had melted and flowed away from the area of localized heating, solidified where the line was cooler and caused a plug, or it may have been a combination of these two.

Conclusions are, therefore, that one should never apply heat for either thawing or repairing any equipment used for handling nitrogen solutions if it can be avoided. Occasionally a steel tank may spring a leak which may be fixed by welding, but generally speaking if a steel tank has corroded that much in one spot, the chances are that it would be unsuitable for use even after patching.

If it is necessary to weld a tank and even aluminum tanks sometimes may need welding, it is recommended that the tank be completely emptied of all materials and thoroughly washed with water until it is free from ammonia fumes. When it is deemed safe for a man to enter the tank, have him enter and with wire brush, chipping hammer and water, thoroughly clean the weld and surrounding area. Ammonium nitrate salts will deposit with corrosion products in hairline cracks and other crevices. Be sure that these areas are thoroughly cleaned. Then carefully proceed with the welding.

If any indication is given during the welding process of the possible decomposition of ammonium nitrate, immediately flood the entire area with water in an effort to cool it down rapidly. Keep men outside the tank to assist the welder. Have a rope around the waist of the man in the tank so that he may be pulled out if need be.

With regard to the handling of pipe, under no circumstances should open flame or other sources of high localized heats be ever used to thaw nitrogen solution pipe lines. Use hot water. As for repairing pipe lines by welding, I cannot think of any place where the cost saved by repairing a bad pipe line can be justified by the risk involved.

This brings us to another problem connected with worn out equipment and that is one of disposal. By all means have the equipment flushed thoroughly with water before disposing of it. Never put used solution equipment where it may be picked up and re-worked for use in other parts of the plant. Have a specific location where this equipment is piled. Use signs indicating that it is not to be welded or cut with cutting torches. If a junk dealer buys this equipment be sure to inform him of the risks involved in using an acetylene torch on it and the necessity for thoroughly cleaning the equipment before such a disposal is made.

Louis H. Wilson Elected To Ag Editors' Board

WASHINGTON—Louis H. Wilson, secretary and director of information for the National Plant Food Institute, was recently reelected to the board of directors of the American Association of Agricultural College Editors at the annual conference at Oregon State College, Corvallis.

He will represent the associate members as a voting member of the board. At the annual convention, he served as chairman of the association's resolutions committee and was appointed to the program committee for the 1961 meeting to be held in Washington, D.C.

Active members of the association include the nation's extension service and experiment station editors.

Montecatini Shareholders Approve Stock Increase

MILAN, ITALY — Shareholders of Montecatini approved, at an extraordinary meeting held in Milan on July 28, a 50% increase in the company's capital stock from 100 billion lire to 150 billion lire (representing an increase in authorized capital of 50 million shares of the par value of 1,000 lire each), and approved the merger into Montecatini of Vetrocoke Co., an Italian manufacturer of nitrogen fertilizers, glass and coke products, located in Venice.

The additional 50 million capital shares will be issued as follows:

(1) 8½ million additional shares will be issued in exchange for 85% of the outstanding capital stock of Vetrocoke Co., on the acquisition of which Vetrocoke will become a wholly-owned subsidiary of Montecatini.

(2) 1½ million additional shares will be offered to employees of the Montecatini group for purchase at a price of 2,000 lire per share; and

(3) 40 million additional shares will be offered next fall to the holders of outstanding capital shares of Montecatini for subscription at a price of 2,000 lire per share, on the basis of four new shares for each 11 shares held.

Montecatini will endeavor to take the necessary steps so as to make the above mentioned subscription offer available to the holders of American shares (each of which represents five capital shares) and, if this does not prove feasible within the time limitations involved, arrangements will be made for the sale outside the U.S. of the subscription rights pertaining to the capital shares underlying the American shares and for the distribution of the proceeds pro rata to the American shareholders.

New Mexico Dean

UNIVERSITY PARK, N.M. — The appointment of Dr. Philip J. Leyendecker as dean and director of agriculture and home economics at New Mexico State University, was announced by Dr. Roger B. Corbett, NMSU president. Dr. Leyendecker has been serving as acting head of the college of agriculture and home economics since the death of Dr. Robert H. Black last April.

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Arcadian® News

Volume 5 | For Manufacturers of Mixed Fertilizers | Number 8

Are You Sure You Use the Right Solution?

IT PAYS TO BE CERTAIN YOUR NITROGEN SOLUTION FITS YOUR PARTICULAR NEEDS

Listed elsewhere in this issue of ARCADIAN® News is the complete line of ARCADIAN Nitrogen Solutions with data about the chemical composition and physical properties of each solution. This line has been designed to cover the wide range of requirements for producing all grades of mixed fertilizers under all conditions of manufacturing.

Your selection of the ARCADIAN Nitrogen Solution that fits your particular needs can increase the efficiency of your operation, help you to produce better quality fertilizer, and save you money.

Choice can be Simple

Under certain conditions, this selection is easy to make. When only one or two fertilizer production factors are important—such as improving physical condition or cutting costs to meet competition—any one of several ARCADIAN Nitrogen Solutions may be suitable to obtain the desired results.

There are other cases where the choice is simple. For example, you may have been successfully producing pulverized fertilizer by using a certain solution, when it suddenly becomes necessary to obtain better control of moisture in the formula. Here again, you can accomplish this by using any one of several ARCADIAN Solutions.

Choice can be Complicated

Your selection of the right solution becomes complicated when numerous factors assume importance in your production problem. For instance, you may wish to generate more heat in the process of granulation. Added to this may be the desire to use the water in the solution for greater uniformity of water distribution with improved safety of operations. As such factors increase, they reduce your choice of solutions.

You may reach the point where it is advisable to re-evaluate the importance of each factor before making your final selection of the right solution, particularly if costly changes in methods or equipment are contemplated. And it pays to make sure you examine the chemical composition and physical properties of each solution in the ARCADIAN line before making your choice.

Freedom of Choice

The big and diversified line of ARCADIAN Nitrogen Solutions offers you a wide range of opportunities in formulating and manufacturing fertilizers. Specific solutions are designed to meet specific requirements. For

(continued on following page)

Nitrogen Division technical men systematically check and analyze the quality and uniformity of ARCADIAN Nitrogen Solutions.

(continued from preceding page)

example, ARCADIAN URANA® Solution adds desirable urea—along with other forms of nitrogen—while improving the physical condition of the fertilizer.

Some ARCADIAN Solutions provide large amounts of nitrate as well as large amounts of total nitrogen in the formulae—all at low cost. Other ARCADIAN Solutions are used in large quantities for their contribution to granulation, achieved at the lowest possible cost of materials and operating expense.

There is a demand today for fertilizers with a high concentration of plant foods and this demand is being met by using the right ARCADIAN Solution. For instance, when ARCADIAN NITRANA Solution 3 is reacted with 75% phosphoric acid, the resulting product in the formula is 22.4% N and 40.0% P_2O_5 or a total of 62.4% plant food (dry basis).

ARCADIAN Nitrogen Solutions add the amounts and forms of nitrogen you want in your fertilizers, plus including the physical properties that are right for your conditions, such as suitable salting out temperatures and reasonable vapor pressures for care-free operation of your ammoniating equipment the year round.

Ask Nitrogen Division

A Nitrogen Division technical service man will be pleased to help you select ARCADIAN Nitrogen Solutions that fit your particular needs—to increase the efficiency of your operation, help you produce better quality fertilizers, and save you money. Contact: Nitrogen Division, Allied Chemical Corporation, 40 Rector Street, New York 6, N. Y.

BASIC FACTS ABOUT NITROGEN SOLUTIONS

Technical literature, tables and graphs often list the physical properties of ammoniating solutions. Although dependent upon the chemical make-up of ingredients, these physical properties are very important to the proper understanding and handling of ammoniating solutions. Check your knowledge of nitrogen solutions on these basic concepts:

1. DENSITY

The density of a liquid is expressed as the weight per unit volume, for example: pounds per gallon. Tank capacities and liquid flows are commonly measured on a volume basis. Density values are necessary in converting the volume measurements to weights, as in formulation per ton.

Because the density varies with temperature, the temperature must be specified. The density of a given liquid can be determined anywhere along the line from solidification temperature to boiling point. However, density is usually quoted at some temperature close to normal operating temperatures.

2. SPECIFIC GRAVITY

For convenience, ammoniating solutions are often quoted in terms of specific gravity rather than density. The specific gravity of a substance is the ratio of weight of any volume of it to the weight of an equal volume of some other substance taken as a standard. The standard for liquids is water. Therefore, the specific gravity of an ammoniating solution is the ratio of its weight to the weight of an equal volume of water. As in the case of density it is necessary to specify the temperature of the ammoniating solution and the water.

All liquids lighter than water have a specific gravity less than 1,000 and all liquids heavier than water have a specific gravity greater than 1,000. For simplification, 60°F is taken as the common temperature at which to quote both density and specific gravity. Water at 60°F weighs 8.334 pounds per gallon. Therefore the density of any liquid can be calculated from its specific gravity at 60°F by multiplying its specific gravity by 8.334. Conversely, the specific gravity of a liquid can be calculated by dividing its density at 60°F by 8.334.

3. VAPOR PRESSURE

The vapor pressure of a solution is the pressure exerted by a vapor or gas released from the solution exclusive of

any influence of added air. It is measured at the surface of the liquid when a state of equilibrium has been reached between the solution and its vapor. Vapor pressure is a function of temperature, and is usually given in terms of gauge pressure, that is—the pressure exerted by the solution above atmospheric pressure. When the vapor pressure of a solution exceeds that of the confining atmosphere, the liquid boils.

Knowing the vapor pressure exerted by solutions, at normal operating temperatures, is of great importance in any consideration of the ease with which solutions can be handled. For example, if such an ammoniating solution were being handled by use of a pump at atmospheric pressures at a temperature where the solution exerted vapor pressure, enough ammonia would be released in the suction side of the pump to vapor-lock it. However, if enough air pressure to overcome this vapor pressure is applied to the tank that supplies the pump, the ammonia would be confined to the solution and it could be handled quite satisfactorily by pumping.

4. SALTING OUT

If ammoniation solutions become too cold, crystallization occurs. The highest temperature at which salt crystals can begin to form is the salting-out temperature or saturation temperature. At any temperature below this saturation temperature, there is possibility of crystals forming which may clog valves and fittings. There is also the possibility of adverse influence on quality and even the analysis of the product.

Under some conditions, solutions can be cooled below the saturation temperature without immediate formation of crystals. In this super-cooled condition, the solution is sensitive to common influences such as vibration, foreign matter or temperature changes which can bring about heavy precipitation of crystals without warning. Since it is impractical to control these influences, many operators protect themselves by avoiding temperature ranges where this trouble can develop. Salting out is one of the most serious problems in operation and safety and every precaution should be taken to safeguard against this possibility. In recognition of this problem the principal properties of ARCADIAN Solutions include the approximate temperature at which salt crystallization begins. This is the highest temperature at which crystallization occurs.

When you desire information of any type about nitrogen solutions, contact: Nitrogen Division, Allied Chemical.

Materials, Methods and Equipment used in making

LIQUID FERTILIZERS

There is widespread and growing interest in complete liquid fertilizers. Here is some technical information that will interest manufacturers who are now producing liquid fertilizers and others who are considering the idea of going into producing N-P-K in liquid form.

Raw Materials

Complete liquid fertilizers, which consist of various fertilizer compounds reacted together by dissolving them with water, are commonly manufactured by combining 4⅓ parts by weight of 75% phosphoric acid with one part by weight of ammonia (either anhydrous or aqueous). This results in a near-neutral 1-3-0 base solution, to which additional nitrogen salts, potassium and water are added as required by formula.

Potassium is usually supplied as 62.5% K_2O equivalent, chemical grade muriate of potash. Potassium carbonate may be used, in which case allowance must be made for the alkaline value of the carbonate in neutralizing the phosphoric acid because less free ammonia is required to bring the solution to a definite pH.

Supplementary nitrogen is supplied from nitrogen solutions, urea, or ammonium nitrate. Urea, either as such or contained in one of several solutions, is commonly used because of its concentration and high degree of solubility.

Manufacturing Methods

The first step in the manufacturing of liquid fertilizers is usually the mixing of the phosphoric acid with water. The quantity of water used must be large enough to keep the phosphoric salts in solution when ammonia is introduced into the acid-water mixture.

The next step is the introduction of ammonia into the phosphoric acid-water mixture. If anhydrous ammonia is used, a double reaction takes place. First, the addition of ammonia to water results in a reaction forming ammonium hydroxide, NH_4OH. This reaction is accomplished by the production of heat (heat of solution).

Secondly, the ammonia reacts with the phosphoric acid, forming mono-ammonium phosphate, $NH_4H_2PO_4$, and di-ammonium phosphate, $(NH_4)_2HPO_4$. This reaction also produces heat (heat of reaction). Grades having high phosphorus contents require large quantities of ammonia to neutralize the phosphoric acid, thus producing high heats of reaction. This heat can be partially controlled by adding to the acid an aqueous solution of ammonia, thus avoiding the heat caused by mixing anhydrous ammonia and water.

Various amounts of nitrogen or potash are added to make a desired grade. The addition of such compounds as urea, ammonium nitrate and potassium chloride creates an endothermic reaction; that is, the solution must absorb heat in order to dissolve the added compounds. A rule of thumb which might be used for a crude estimate of temperature decrease involved in making a liquid formulation by the addition of ammonium nitrate, urea or potassium chloride to a neutral solution is that the temperature of the solution will decrease 2.2 degrees F. for each per cent nutrient contributed from potassium chloride or urea and 2.7 degrees F. for each per cent nutrient contributed by adding ammonium nitrate.

To control the salting-out temperature and corrosive effects of the finished products, it has been found advisable to neutralize the phosphoric acid to a point part way between the formation of mono-ammonium phosphate and di-ammonium phosphate. This is so that the total ammonium phosphate present is roughly about ⅓ mono- and ⅔ di-ammonium phosphate. This gives a pH value of around 6.2 to 7.0 depending on how far the neutralization is carried and the particular combination of salts present.

Manufacturing Equipment

Manufacturing processes generally fall into one of three categories:

1. The batch weighing system in which raw materials are progressively charged into the reactor, which is usually mounted directly on a scale beam.
2. The metering system in which liquid raw materials are metered into the reactor and solids weighed.
3. The weigh-holding tank system, in

(continued on following page)

(continued from preceding page)

which liquid materials are pre-measured in holding vessels and dry materials weighed. Many combinations of these three systems are presently in use. Continuous processes are possible with a metering system.

New Developments

Refined wet-process phosphoric acid is gaining wide use in the manufacture of liquid fertilizers, as a result of the development of new methods of holding in solution the precipitates formed by the use of this acid. This represents a significant savings, because of the lower cost of wet-process acid as compared to furnace grade acid.

Experimental work in the field with a concentrated super-phosphoric acid has resulted in higher analyses than were formerly possible with favorable salting-out temperatures.

The recent use of clay suspending agents to overcome salting-out problems attendant with higher analyses also shows some promise in the field.

Ask Nitrogen Division

If you desire additional information on the production of complete liquid fertilizers, get the advice of a Nitrogen Division technical service man. Contact: Nitrogen Division, Allied Chemical Corporation, 40 Rector Street, New York 6, N.Y. Phone: HAnover 2-7300.

Arcadian

NITROGEN SOLUTIONS

	CHEMICAL COMPOSITION %						PHYSICAL PROPERTIES		
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Neutralizing Ammonia Per Unit of Total N (lbs.)	Approx. Sp. Grav. at 60° F	Approx. Vap. Press. at 104° F per Sq. in. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
NITRANA®									
2	41.0	22.2	65.0	—	12.8	10.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	10.8	1.147	18	15
3	41.0	26.3	55.5	—	18.2	12.8	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	12.7	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	12.6	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	8.9	1.184	1	56
4M	41.0	19.0	72.5	—	8.5	9.2	1.194	7	61
6	49.0	34.0	60.0	—	6.0	13.9	1.050	48	-52
7	45.0	25.3	69.2	—	5.5	11.2	1.134	22	1
URANA®									
6C	43.0	20.0	68.0	6.0	6.0	9.3	1.180	12	39
6M	44.0	22.0	66.0	6.0	6.0	10.0	1.158	17	14
10	44.4	24.5	56.0	10.0	9.5	11.0	1.114	22	-15
11	41.0	19.0	58.0	11.0	12.0	9.2	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	11.7	1.087	25	- 7
13	49.0	33.0	45.1	13.0	8.9	13.5	1.033	51	-17
15	44.0	28.0	40.0	15.0	17.0	12.7	1.052	29	1
U-A-S®									
A	45.4	36.8	—	32.5	30.7	16.2	0.932	57	16
B	45.3	30.6	—	43.1	26.3	13.5	0.978	48	46
Anhydrous Ammonia	82.2	99.9	—	—	—	24.3	0.618	211	-108

Other ARCADIAN® Products: URAN® and FERAN® Solutions • Ammonia Liquor • N-dure® A-N-L® • Ammonium Nitrate • UREA 45 • Nitrate of Soda • Sulphate of Ammonia

NITROGEN DIVISION

MAIN OFFICE: 40 RECTOR ST., NEW YORK 6, N. Y., PHONE HANOVER 2-7300

Allied Chemical

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Ironton, Ohio, P. O. Box 98 ..... Drexel 7-4366
Omaha 7, Neb., P. O. Box 166 ..... Bellevue 1464
Raleigh, N. C., 606 Capital Club Bldg. ..... Temple 3-2801
Columbia 1, S. C., 1203 Gervais St. ..... Alpine 3-6676
Atlanta 3, Ga., 127 Peachtree St., N. E. ..... Jackson 2-7805
Memphis 9, Tenn., 1929-B South 3rd St. ..... Whitehall 8-2692
Columbia, Mo., 1134 Highway 40W ..... Gibson 2-4040
Indianapolis 20, Ind., 6060 College Ave. ..... Clifford 5-5443
Kalamazoo, Mich., P. O. Box 869 ..... Kalamazoo 5-8676
St. Paul 14, Minn., 764 Vandalia St. ..... Midway 5-9141
San Francisco 4, Cal., 235 Montgomery St. ..... Yukon 2-6840

INDUSTRY PERSONNEL NEWS

Freeport Sulphur Co. Advances Two Executives

NEW YORK—Thomas R. Vaughn has been elected vice president and general counsel and John C. Carrington vice president of sales by the board of directors of Freeport Sulphur Co., Charles A. Wight, president, announced Aug. 4. Mr. Vaughn joined Freeport's legal department in 1942. He was elected assistant secretary of the company in the same year and assistant vice president in 1947.

John C. Carrington

Mr. Carrington joined the company in 1939 as assistant to vice president. He was made director of personnel relations in 1945 and director of public relations in 1946. In 1947 he was elected assistant to president and, in 1952, vice president.

●

Becomes Superintendent

ATLANTA — Fulton Cotton Mills, Atlanta, has promoted George F. Watson to superintendent of the cotton mills. He has been serving as acting superintendent, according to Clarence E. Elsas, president.

Mr. Watson was born in North Carolina. He attended public schools there, graduating with a B.S. degree in textile manufacturing from the N.C. State College.

Mr. Watson joined Fulton in October, 1957, as assistant superintendent.

●

To New PCA Position

CARLSBAD, N.M. — Potash Company of America has named George A. Lux to the position of chief industrial engineer. H. N. Clark, vice president in charge of production made the announcement.

Mr. Clark explains that this position is a new one established to provide service in the fields of management sciences covering industrial and methods engineering. Mr. Lux' former connections were with American Viscose Corp., Parkersburg, W. Va. and International Minerals & Chemical Corp. at Carlsbad where he became plant industrial engineer. He had been most recently staff manager of industrial engineering at IMC's phosphate operations at Bartow, Fla.

●

Armour Appointments

William H. Cover

Paul N. Parks

ATLANTA, GA.—William H. Cover has been appointed midwestern area sales manager of the Armour Agricultural Chemical Co. in Atlanta, announced H. Vise Miller, company vice president and general manager of its fertilizer division.

Mr. Cover, formerly Armour's division manager in Jeffersonville, Ind., will be succeeded by Paul N. Parks, Mr. Miller also announced. Mr. Parks has been assistant manager of the firm's Cincinnati division snce 1959.

●

Heads Dow Market Research

MIDLAND, MICH.—Dow Chemical Co. has named J. W. Everson as market research department manager, succeeding Parker Frisselle, who was put in charge of the consumer sales development group. Mr. Everson had been market research assistant manager since 1953.

●

Heads Denver Office

NEW YORK—W. L. Yearsley has been placed in charge of the Denver sales office of the Chase Bag Co. He has been with the packaging firm since 1937, most of this time as its representative in Des Moines, Iowa.

Mr. Yearsley is well known to agricultural shippers, particularly in the produce, seed, milling, feed and fertilizer trades. In Denver he will service these industries with multiwall, textile, plastic and open mesh bags and other types of flexible packaging.

●

Grace Names Executive

NEW YORK—J. Peter Grace, president of W. R. Grace & Co., announced that Osgood V. Tracy, formerly president of Esso Standard division of Humble Oil & Refining Co., has been elected a director and an executive vice president of W. R. Grace & Co.

Mr. Tracy will fill the post held by the late Marlin G. Geiger who died May 13, 1960. He will be in charge of the chemical business of Grace and will be responsible for the seven operating divisions as well as the research division comprising the Grace Chemical group.

●

Directs Laboratory

NEW YORK — The promotion of Dr. J. H. Ware to director of the product laboratory of the agricultural division of American Cyanamid Co. has been announced by Dr. J. T. Thurston, manager of research and development for the division. Effective immediately, Dr. Ware's new responsibilities will involve physical and chemical formulation studies of experimental chemicals and drugs for plant and animal use, and analytical procedures for proving the safety, effectiveness and stability of all agricultural division products.

Dr. Ware was formerly assistant to the manager of research and development. He joined American Cyanamid Co. in 1955 after receiving his Ph.D. in biochemistry from the University of Arizona.

●

Manager Apointments

William W. Young

Niven D. Morgan, Jr.

NEW YORK — William W. Young has been appointed southern area regional sales manager for American Potash & Chemical Corp., announced Dr. A. J. Dirksen, general sales manager, eastern.

Mr. Young, who will open the company's first regional headquarters at Atlanta in the near future, will have sales and administrative responsibility for the Atlanta and Shreveport district offices.

Niven D. Morgan, Jr., formerly sales manager at Shreveport, replaces Mr. Young as district manager at that office.

C. L. Straughan continues as manager of the Atlanta district and will assist Mr. Young with regional matters.

●

Seven Spencer Assignments

KANSAS CITY — New territorial assignments involving seven men in Spencer Chemical Co.'s agricultural chemicals division have been announced. According to Ray White, general sales manager, new assignments will concentrate greater sales effort in the states involved.

In the division's north-central sales district, F. A. McGuire will become special accounts representative and his post as Illinois sales representative will be filled by Ned Haldeman. Mr. Haldeman has been the Spencer representative in Louisiana and Mississippi since 1956. Moving to the north-central district as the representative for direct application solutions will be Paul Potterton. Mr. Potterton joined Spencer this summer after receiving his master's degree in soils from the University of Wisconsin.

Two states in the Northwest district have been divided and a salesman assigned to each territory. In Iowa, Coy Babb will be the Spencer representative in the western half of the state and Don Johnson in the eastern half. In Nebraska, Keith Carter will represent Spencer in the eastern half and Bill Smith in the western half. Mr. Babb has been in Iowa since 1956 and Mr. Carter in Nebraska since 1957. They were joined by Mr. Johnson and Mr. Smith in 1959.

●

Heads IMC District

SKOKIE, ILL. — Dick Lenz has been promoted to Mason City district sales supervisor for the plant food division of International Minerals & Chemical Corp., announced John Zigler, vice president. The district covers Iowa and Minnesota.

Dick Lenz

In addition to his supervisory duties, Mr. Lenz will assist John Coates, district sales manager, in the coordination of sales and sales training programs. He will also participate in sales planning and market surveys.

Mr. Lenz joined IMC as a sales trainee in the Mason City district three years ago and was promoted to sales representative a year later.

●

Phillips Appoints Two

BARTLESVILLE, OKLA.—Phillips Petroleum Co. announces the appointment of L. H. Wright, former assistant sales manager, to be in charge of the administrative supervision of LP-gas and fertilizer sales. R. S. McConnell has been promoted to manager of fertilizer sales.

Mr. Wright has been with Phillips since 1930. Prior to 1949, when he was appointed manager of fertilizer

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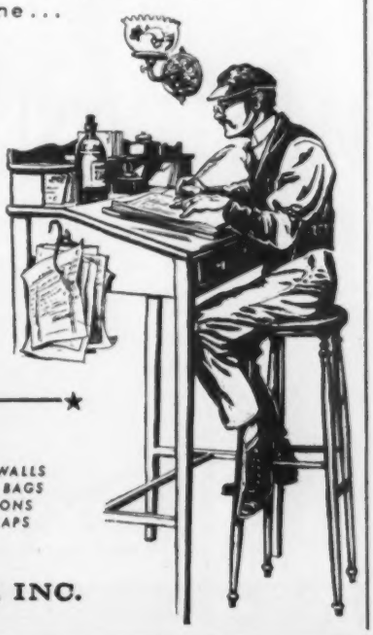

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sales, he was engaged in various phases of the company's LP-gas marketing in Milwaukee, Chicago and Bartlesville.

Mr. McConnell joined Phillips in 1946. For the past five years he has been coordinator of fertilizer sales. He previously was assistant division manager in Wichita, in charge of fertilizer sales.

●

Bemis Promotion

ST. LOUIS—E. M. Proctor, manager of production for the western operations of Bemis Bro. Bag Co., has been named assistant director of production for the entire company effective Sept. 1, announced Judson Bemis, president.

E. M. Proctor

Mr. Proctor, who will move from the firm's western headquarters in San Mateo, Cal., to the general offices in St. Louis, joined the company in 1926, following his graduation from Massachusetts Institute of Technology. He became manager of Visinet (open-mesh) sales in 1939 and was placed in charge of all open-mesh sales and burlap distribution in 1942.

Twelve years ago, he was appointed manager of the company's Seattle manufacturing plant. In 1956, he was named manager of production for western operations.

●

Witco Reassignments

NEW YORK — New assignments for Richard H. Dorsett and Robert Stevenson of the southwestern sales staff of Witco Chemical Co.'s organic chemicals division have been announced by Jerome S. Harrison, the division's director of marketing.

Richard H. Dorsett

Mr. Dorsett, formerly with the division's sales force in Dallas, Texas, has been appointed southwestern sales manager, with headquarters in Houston, Texas. The southwestern sales territory includes Texas, Oklahoma, Louisiana, Arkansas and Mississippi.

Mr. Stevenson has been transferred from Houston to Dallas.

●

Vulcan Sales Manager

PEABODY, MASS.—George S. McTavey has been named sales manager of Atlantic-Vulcan Steel Containers, Inc., Peabody, according to an announcement by Gordon D. Zuck, president.

George S. McTavey

For the past nine years, Mr. McTavey was associated with Nafton, Inc., of New York, and he is well acquainted with the paint, chemical and printing ink trade in the east and many other areas. Prior to that, he contacted manufacturers of agricultural and industrial chemicals in New England, New York and Pennsylvania.

Mr. McTavey will contact users of steel pails and specialty cans throughout New England and the eastern states, and will be in charge of all sales activities.

●

Selected as Manager

WILMINGTON, DEL. — The appointment of Joseph N. Borglin as manager, customer service, pine chemicals division of the Naval Stores Department of Hercules Powder Co. has been announced. In his new position, Mr. Borglin will be concerned with established products of the pine chemical division.

●

Joins Sales Staff

MINNEAPOLIS — R. W. Duncan has joined the sales staff of Northwest Nitro-Chemicals, announced T. B. Potter, executive vice president of the company. He will open new sales offices for the company in Portland, Ore.

Mr. Duncan was formerly manager of the fertilizer division of Pacific Supply Co-op. He is a native of Wrangel, Alaska.

Public Relations Man

WASHINGTON—Richard D. Lambert has joined the staff of the Manufacturing Chemists' Assn., Inc., as public relations representative.

Mr. Lambert comes to the chemical industry association from a position as assistant director of information for the Independent Association of America, with offices in Washington.

A former newspaperman, Mr. Lambert will have principal responsibilities in relationships with various communication media, as well as in other public relations activities of the MCA.

●

Assistant Supervisor

KANSAS CITY — Dr. Robert W. Earhart, research biologist with Chemagro Corp., has been appointed assistant supervisor in the company's research program. In his new assignment, he is responsible for greenhouse and field plot testing of new agricultural chemicals being developed by Chemagro.

Dr. Robt. R. Earhart

Prior to his association with Chemagro in 1959, he served as professor of botany at Clemson Agricultural College, Clemson, S.C. He had previously been plant pathologist with the U.S. Department of Agriculture and the Florida and South Carolina agricultural experiment stations.

Dr. Earhart received his bachelor of science degree in agronomy from Iowa State University, his master of science degree in plant breeding and his doctorate in plant pathology from the University of Wisconsin.

●

Calspray Names Three

RICHMOND, CAL. — California Spray-Chemical Corp. announced the appointment of Donald H. Loomis as a sales representative for the firm. Mr. Loomis is a resident of Cumberland, Md., and will work in the surrounding territory.

Roger L. Simmons has been named garden and home branch manager in the Memphis office. Mr. Simmons had been with Ortho for four years as a sales representative in Texas.

James A. Nichols has been named supervisor of branch services at the Calspray Wintergarden branch. Mr Nichols was formerly a sales representative for the well-known chemical firm.

●

To Manage Department

PORTLAND, ORE.—Lee R. Hansen has been named manager of the West Coast agricultural chemical department of Great Western Chemical Co., announced W. C. McCall, president.

Lee R. Hansen

Mr. Hansen has 15 years' experience in the agricultural chemical sales field, having worked with L. H. Butcher Co., Olin Mathieson Chemical Corp. and U. S. Borax & Chemical Corp. He formerly was on the agronomy staff at Oregon State College for several years. He is a graduate of the University of Nebraska.

TONNAGE REPORTS

Kentucky

LEXINGTON, KY.—Fertilizer sales in Kentucky during June amounted to 43,505 tons, compared with 26,415 tons sold during the same month in 1959, reported the Department of Feed & Fertilizer, Kentucky Agricultural Experiment Station. Most popular grade was 5-10-15, with 13,337 tons sold.

●

Alabama

MONTGOMERY, ALA.—The Alabama State Department of Agriculture & Industries reports that during June, 1960, 86,558 tons of fertilizer were sold, or substantially more than the 69,909 tons sold during the same month the previous year. Most popular grade was 12-12-12, of which 6,713 tons were sold. Most popular material during the month was nitrate of soda, with 22,948 tons sold.

●

Oklahoma

STILLWATER, OKLA.—Fertilizer sold in Oklahoma during June, 1960, was 11,213 tons, or 2,586 tons more than the same month a year ago, reported the Oklahoma Department of Agriculture. Most popular grade was 10-20-10, with some 2,454 tons being sold.

●

Florida

TALLAHASSEE, FLA.—Lee Thompson, commissioner, Florida Department of Agriculture, reports that 116,570 tons of mixed fertilizer and 69,325 tons of fertilizer materials were sold in the state during June, 1960. This makes a grand total of 185,895 tons sold in the state during the month.

●

South Carolina

CLEMSON, S.C. — South Carolina outlets sold 11,122 tons of fertilizer during July, 1960, reported B. D. Cloaninger, director, Clemson College Fertilizer Inspection & Analysis Department. This was 12% less than that sold during July of the previous year.

ACS Pesticide Symposium Scheduled

ST. LOUIS—Authors of technical papers scheduled to be presented at the symposium on "The Metabolism of Pesticide Chemicals and Food Additives in Animals and Man" at the April, 1961 meeting of the American Chemical Society here, should plan on turning in title and a 200-word abstract by Dec. 15, 1960, according to Louis Lykken, chairman of the ACS Pesticides Subdivision. Complete papers should be submitted three weeks prior to presentation.

Mr. Lykken says that the symposium is being organized by Dr. R. D. Radeleff of the animal disease and parasite research branch of the Agricultural Research Service, U.S. Department of Agriculture. Although there will be invited papers presented at the symposium, consideration will be given to proffered papers that fall within the subject, it is pointed out.

In addition to the symposium mentioned above, the division of Agricultural and Food Chemistry and its Pesticide Subdivision also plan to have several sessions at the meeting. Deadlines for papers for presentation at this meeting are approximately the same as for the symposium, he said.

All papers should be submitted to Dr. R. D. Radeleff, Agricultural Research Service, USDA, P.O. Box 232, Kerrville, Texas.

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Building bigger profits for your customers by supplying this vital element in your alfalfa mixes can also build bigger profits for you. Millions of acres of alfalfa need boron *every* year. So, take advantage of this major market for a minor element. Always consult your state agricultural authorities for specific amounts to use.

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Boron-hungry Alfalfa . . . Dwarfed . . . with yellow or reddened top leaves, stunted; growing tips rosetted. These are nature's distress signals calling for boron.

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No. 9237—Corrosion Article

"Corrosion in Liquid Fertilizer Equipment" is the title of an article prepared by U.S. Steel Corp., as an approach to solving the problem of corrosion through the selection of materials and maintenance. The article was reprinted from "Solutions" magazine, and contains results of laboratory tests, charts, photographs, service test results and a discussion of results. Copies of the article can be obtained by checking No. 9237 on the coupon and mailing.

No. 9239—Shipping Sacks

A new line of moisture-resistant multiwall shipping sacks with a

polyethylene and paper construction, has been announced by Chase Bag Co. Called the "Poly-Ply Multiwall," the bags feature a multiwall structure that includes a separate, intermediate ply (not a liner) of lightweight sheet polyethylene, spot pasted at top and bottom to adjacent layers of heavy duty kraft paper. Standard sizes are 25 lb., 50 lb. and 100 lb., with either sewn-open-mouth or sewn-valve closure. For details, check No. 9239 on the coupon and mail.

No. 9238—Bag Dumper

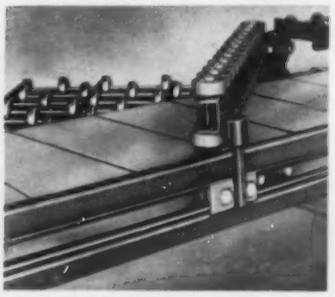
The "Cesco Bag Dumper" has been announced by Conveyors and Dumpers, Inc., division of Mercury Industries. According to the company, bags of all types may be emptied, including burlap, multiwall, open-mesh, cotton, polyethylene and other textiles and plastics. Detailed information on all models is available. Check No. 9238 on the coupon and mail.

No. 9242—General Bulletin

B-I-F Industries has published an 8-page general bulletin which gives capsule information about many of its products and systems. Butterfly valves, supervisory control systems, totalizing meters, water and waste treatment equipment and systems, flow meters, process instrumentation feeders for solids and liquids and blenders for liquids are included. For copies, check No. 9242 on the coupon and mail.

No. 9240—Redesigned Conveyor

Lower horsepower requirements, simplified assembly and installation, a body depth one half that of previous models and a new belt design that permits conveyor lengths up to 500 ft. are features of the redesigned "Armorbelt" unitized all-metal belt conveyor manufactured by M-H Standard Corp. Another feature, according to the company, is a continuous "Speedbar" channel on both sides of the conveyor. The channel permits the fastening of side tables, deflectors, electric controls and other attachments at any point along the sides of the conveyor without the need for drilling. This channel can also be used to connect legs or ceiling supports at any position to suit building conditions or to clear obstructions. For complete details check No. 9240 on the coupon and mail.

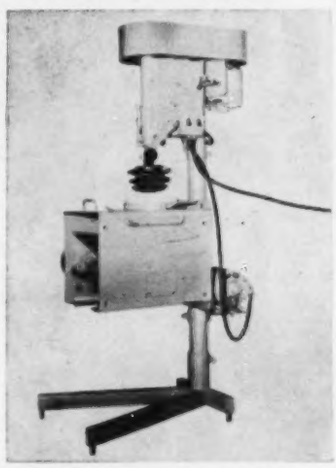


No. 9243—Corrosion-Resistant Tank

"Poxyglas," a corrosion-resistant tank for use in storage, transportation and distribution of corrosive materials, has been announced by Black, Sivalls & Bryson, Inc. Poxyglas is epoxy resin bonded, and glass filament wound. It is non-toxic and odorless. They are available in sizes up to 12 ft. in diameter. The product is produced by a process of combining glass-fiber rovings and thermosetting epoxy resins in a precision winding pattern. For details, check No. 9243 on the coupon and mail.

No. 9241—Soil Pulverizer

The University of Wisconsin soils laboratory has developed a machine where samples of soils can be prepared for analysis in a minute or less, announced the Wisconsin Alumni Research Foundation. The invention accomplishes the job of deaggregating the soil to desired and uniform mesh sizes without crushing or powdering the individual soil crystals. According to the foundation, one operator can process more than 100 soil samples in one hour with the power driven machine. Called the Nasco-Asplin soil pulverizer, it is described as a mechanized mortar and pestle. Information on the unit can be obtained by checking No. 9241 on the coupon and mailing.



No. 9244—Heavy Duty Bags

Heavy duty shipping bags made from special compounds of high density polyethylene have been announced by W. R. Grace & Co. According to company literature, the bags have undergone considerable testing, including an 11½ ft. drop on a concrete floor, tumbling the bag in a 30 in. square wooden box, and others. A feature, the company says, is the saving of storage space when bags are empty. In one test, bags filled with granulated triple superphosphate were unaffected by rain or snow in outside storage. For more details, check No. 9244 on the coupon and mail.

No. 9253—Attapulgite Laboratory Report

Results of a study into the stabilization of liquid fertilizers have been published by Minerals & Chemicals Corporation of America. The report discusses the problems of uniformity and analysis in the production of liquid fertilizers and presents the results of a study of colloidal attapul-

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- ☐ No. 9242—General Bulletin
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- ☐ No. 9247—Air Cylinder, Valve
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gite as an agent to solve these problems. The eight page illustrated report describes the formulations tested and presents detailed test results. Methods of dispersing the stabilizing agent are discussed. Photographs of treated and untreated laboratory samples, of such fertilizers as 6-12-12, 8-16-16, 14-14-14 and 5-10-10 illustrate the stabilizing action of the attapulgite product. For copies, check No. 9253 on the coupon and mail.

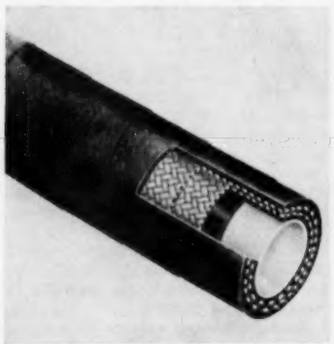
No. 9245—Solenoid Valve

A new line of chemically inert, corrosion-resistant solenoid valves, with molded bodies made of Teflon, have been developed by Valcor Engineering Corp. The valves are shock re-

sistant and pressure proof, the company says. The valves are designed for normally closed applications in all normal AC and DC voltages. Complete technical information is available by checking No. 9245 on the coupon and mailing.

No. 9246—Teflon-Lined Hose

"Flexlon," a hose that the company claims withstands all known chemicals except fluorine gas, chlorine trifluoride and molten alkali metals, has been announced by Manhattan Rubber Division of Raybestos-Manhattan, Inc. The hose has low permeability and zero water absorption, the com-



pany says, and cleaning and sterilization are easy due to the waxy Dupont Teflon tube. Flexlon hose is suited for flexible connections in process equipment handling corrosives, caking slurries or solvents, and for conveying fluids requiring sterilization and easy cleaning. Temperatures to 325° and working pressures to 1,500 psi are acceptable, depending on size and type of hose, the company says. It is available in diameters to 1¼ in. in 15-50 ft. lengths. For details, check No. 9246 on the coupon and mail.

No. 9247—Air Cylinder, Valve

A. Schrader's Son, division of Scovill Manufacturing Co., has announced the availability of an air cylinder and four-way valve to be used as a gate-opening system on fertilizer weigher-hopper operations. When vibrators fail to prevent hang-up of material, the operator works

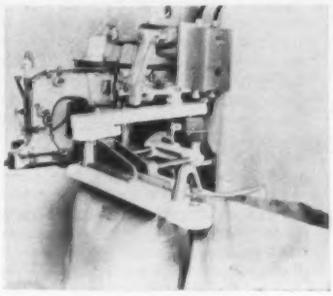
the air-valve handle back and forth. The air cylinder rapidly opens and shuts the gate, cutting up the lumps and promptly emptying the hopper. The units are designed for dependable use in plants having extreme dust conditions, the company says. For information and details, check No. 9247 on the coupon and mail.

No. 9248—Ribbon Blender Brochure

Tower Iron Works has announced the availability of a brochure on its ribbon blender. Intended as a buying guide to those in the processing industry, the brochure is a technical work that describes the company's complete line of pre-engineered ribbon blenders giving capacities and dimensions plus a description of the features. The brochure also illustrates four of the company's standard agitators. For a copy of the brochure, check No. 9248 on the coupon and mail.

No. 9249—Sewing Attachment

The development of a sewing attachment to simplify and speed closure of multiwall paper shipping bags has been announced by Bemis Bro. Bag Co. The "Sew-Rite" attachment, which is mounted on the sewing pedestal, permits the bag to adjust itself properly before engaging the sewing machine, the company says. An operator guides the filled bag into the co-acting V-belts of the at-



tachment. From that point, the bag is fed into the machine and the operator is free to grasp and lead the next bag into the attachment. Full information can be obtained by checking No. 9249 on the card and mailing.

SOHIOGEN® SOLUTIONS PACE THE TREND TO HIGH-ANALYSIS FERTILIZERS

With changes coming at a startling rate in the fertilizer business, just keeping up with them can be a problem. But Sohio keeps its customers ahead of the trend to high-analysis fertilizers by tailoring solutions to the times.

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YOU GET THESE EXTRA ADVANTAGES WHEN YOU DEAL WITH SOHIO:

- Higher nitrogen content solutions (concentrated solutions containing less water).
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CONFERENCE

(Continued from page 2)

Beacher, director of the NPFI Southern region, Atlanta, told the group about current activities of the Institute, and introduced E. K. Chandler whom they said would soon assume duties as Southeastern district representative for NPFI with headquarters in Shreveport.

C. B. Spencer of the Texas Cottonseed Crushers' Assn. told the conference that nearly one half of the six million acres of Texas cotton received no fertilizer last year. He noted that the opportunity for increased fertilizer use is greatest in the Blackland and in Central Texas, not in West Texas where fertilizer use already is near its economic optimum.

Mr. Spencer outlined a new educational program directed to Texas cotton farmers and said that cotton growers who consistently make high yields of good quality cotton and also the most income are those who follow a proven route which includes adequate use of fertilizer. He added "We don't feel we have any possibility of getting our farm income on the right track without more fertilizer."

Dr. John E. Hutchison, director of the Texas agricultural extension service, outlined the progress of the Texas intensified soil fertility program which started in the fall of 1959. He noted that the number of soil samples processed this year for the thirteen counties jumped 300% over the previous year. Economists will evaluate the adoption of improved practices at the end of this growing season.

A new soil testing laboratory will soon be in operation at Lubbock to serve the West Texas area, he noted. Commenting on the potential income for the state, Dr. Hutchison said that use of better fertilizer practices would play as significant a role as anything he could think of. He said that Texas farm income could be increased by $250 million over the present $2½ billion through effective intensified soil fertility programs.

Woody N. Miley, Arkansas extension soil specialist, told how that state's demonstration and intensified soil fertility program led to a boost in fertilizer consumption of 9% during 1959-60 in the five county intensified area. Consumption for the state as a whole climbed only 2.7%. Primary plant nutrient consumption soared 13% in the five counties, and 6% for the entire state. In Lawrence, one of the original intensified counties, soil samples more than doubled and total plant food use increased 40% since 1958.

Enoch T. Nix, vice president of the American Bank of Boosier City, La., told the conference that the farmer who used fertilizer properly is a better credit risk. He said that loans for fertilizer usually are better for farmers than any other farm production item and these loans provide bankers with an opportunity to protect their investments. Applications for farm production loans should require a comprehensive management plan for the farm with anticipated costs and returns, and a well-planned soil fertility program.

Keynote speaker for the morning program was Ralph Everett, director of Empire Sales Training Co., Miami, Fla. Mr. Everett emphasized that farmers should be sold on the basis of what fertilizer can do for them in terms of increased net profits, rather than on the basis of price alone.

In the session of July 29, fertilizer control officials and land-grant college representatives from Arkansas, Louisiana, New Mexico, Oklahoma, and Texas reported on the fertilizer grades approved for the coming year and consumption figures for the 1959-60 year to date. In Arkansas, total fertilizer consumption moved up to 362,000 tons in 1959-60 from 353,000 in 1958-59. Louisiana showed a 1% increase in total tonnage for the nine month period of September through May, and an 11% increase in use of approved fertilizer grades. Oklahoma's 1959-60 tonnage totaled 145,000, compared to 133,000 last year.

FAO REPORT

(Continued from page 2)

and these include total trade in fertilizers as well as types of fertilizers entering international trade. Figures for the past four or five years have been revised, and the classification of fertilizers has been expanded.

A special feature of the review is data on the intensity of consumption of fertilizers per thousand hectares of arable land (that is, cultivated land plus land under fruit trees, shrubs and vegetables, plus temporary meadows and pastures) and per thousand hectares of agricultural land (that is, arable pland plus permanent meadows and pastures). According to the review the combined output of three major kinds of fertilizers (nitrogen, phosphoric acid and potash) in 1959 was 24,300,000 tons, 8% above the production in 1957/58, and 37% above the production in 1953/54. Consumption in 1958/59 was 22,980,000 tons, 7% above the figure in 1957/58 and 31% above 1953/54.

Trade also expanded and in 1958/59 was about 6,300,000 tons—2% more than in 1957/58—and is estimated to be 40% above that of 1953/54. The review says that the evident excess of production capacity caused some anxiety in some quarters, but "its main effect has been to promote use wherever possible." It adds that areas where population pressure is heavy, such as Mainland China and India, offer the best prospects for increased consumption.

In 1958/59 Europe and North and Central America produced about 88% and consumed 81% of the total world supplies of fertilizers. Europe's production was 56.6% and North and Central American production was 31%. Their consumption was 51.3% and 30.4% of the world total. The biggest rise in production and consumption of fertilizers took place in Asia, in both cases the rise being of the order of 66% in 1958/59, compared with 1953/54.

African production has increased by 57%, European by 38%, North and Central American by 35% and that in Oceania by 20%. But, in South America production fell by 1%. Consumption in Africa over the same six-year period rose by 59%, in Europe by 30%, in North and Central America by 17%, in Oceania by 25% and in Latin America by 46%. However, the biggest net rise in consumption of all fertilizers was in Europe—2,946,000 tons in 1958/59 compared with 1953/54. A more appropriate index of fertilizer use is the consumption per thousand hectares of arable land and agricultural land (that is land including permanent meadows and pastures). The average for the arable land of the world was 20.23 kilograms per 1,000 hectares and for the entire agricultural land it was only 7.15 kilograms.

Several countries planned to augment or to start production. Within the next five years 20 countries have planned to increase production of nitrogen, phosphoric acid and potash fertilizers by 3,700,000 tons. (This is 15% of the total world production today.) Of these 20 countries, Israel was planning the biggest rise in production by adding 800,000 tons to its capacity.

"I think I twisted my back!"

Kansas State Plans 2nd Safety Conference

MANHATTAN, KANSAS—Kansas State University will be host to a second conference on fumigation safety, to be held on the campus at Manhattan, Sept. 8-9.

More than 200 persons working with fumigants attended the spring safety meeting, and this was followed by a series of five area conferences on the subject. The second K-State conference is for persons who were unable to attend any of the other two-day meetings, explains Herbert Knutson, head of the department of entomology.

Mr. Knutson says the same subject matter will be presented at the Sept. 8-9 conference as at the spring meeting, although many of the speakers will be different. Topics include poisonous properties of fumigants; the physical, chemical, and biological properties of fumigants; safe storage and avoidance of fire; respiratory and other protective equipment, and methods of handling and applying fumigants safely.

Persons interested in attending the fall fumigation safety conference should make advance registration by Sept. 3, Mr. Knutson says. Application blanks may be obtained from the university conference coordinator, Umberger hall. There is an enrollment fee of $10.

Southeastern Group Plans October Meeting

ATLANTA, GA.—The Fifth Southeastern Fertilizer Conference will be held at the Biltmore Hotel here, Oct. 5-6.

Main topic for discussion the first day will be "What Does Agriculture Need?" Exploring the various answers will be Paul T. Truitt, president, National Plant Food Institute; L. Y. Ballentine, commissioner of agriculture, North Carolina Department of Agriculture; Dr. Earl A. Butz, dean, college of agriculture, Purdue University; Donald R. Matthews, representative, eighth district of Florida, and W. A. Sutton, director, Georgia Agricultural Extension Service.

The second day program will cover "What Is Industry's Responsibility for the Future of Agriculture?" Dr. R. O. Parks, vice president, Grace Chemical Co., will deliver the address.

Canadian Fertilizer Shipments Rise in '59

OTTAWA—Value of factory shipments from the fertilizer industry in Canada reached a record $96,278,300 in 1959, up 8.0% from $89,145,800 in 1958 and 4.1% from the previous high of $92,498,800 reached in 1955. Number of establishments was unchanged in 1959 from 1958 at 45 and employees at 3,001, while salaries and wages rose to $13,804,700 from $13,424,800 and cost of materials and supplies to $50,470,100 from $48,594,000.

Hooker Acquires Butler Chemical Co. at Houston

NEW YORK — Hooker Chemical Corp. has acquired the Butler Chemical Co. of Galena Park, Texas, near Houston. Announcement was made by Thomas E. Moffitt, president of Hooker, and George A. Butler, attorney, banker and president of Houston Corp., Houston, Texas, of which Butler Chemical is a division.

Sale price was not disclosed.

Mr. Moffitt said that the plant will retain its nearly 75 employees and that John Hinkel will continue as general manager. Sales department of the firm will continue to be headquartered in the Esperson Building in Houston under the direction of Floyd Gee. For the present the plant will be operated as a separate unit of Hooker under the Butler Chemical name.

Mr. Butler said, "I feel sure that our employees will benefit from the stability and progressiveness of Hooker Chemical, which is a well-diversified growth company. I look for Hooker to move ahead rapidly here as it has elsewhere and be a real asset to Houston."

Mr. Moffitt stated that the company looks forward to the opportunities available for further developing this rapidly growing phosphate rock feed supplement business at Houston. "Furthermore," he said, "we already manufacture elemental phosphorus and many phosphorus-derived products and other chemicals, some of which may lend themselves to also being made at Houston one of these days, particularly because of the large chemical and petrochemical plant complex in the area. The chemical industry is its own best customer."

Mr. Moffitt pointed out that defluorinated phosphate rock increases Hooker's diversification. It is a logical addition to Hooker's present feed supplement business, and also fits into the company's product line of phosphorus derivatives, he added.

The Butler plant is located on a 20-acre site on the Houston Ship Channel in the metropolitan Houston industrial area. As its main raw material, the company uses Florida phosphate rock which has been dried and ground. The rock is then shipped to Butler's plant where, essentially, it is treated with phosphoric acid under heat, making it suitable for mixing into feed formulations.

Marketed under the trade name of "Pollyphos," Butler sells its product to midwest and west coast feed manufacturers. Annual sales are not disclosed.

Started in 1946, the company was taken over by Butler Chemical Co. in 1955 and it became a division of Houston Corp. in 1956.

Hooker Chemical Corp., which had 1959 net sales totaling $149,817,500, is a 56-year-old manufacturer of chemicals and plastics.

Among Hooker's new facilities is a phosphoric acid, sodium tripolyphosphate and tetrasodium pyrophosphate facility at Lecheria, near Mexico City. That plant was modeled after the Hooker Phosphorus Division plant at Dallas, Texas, making the same products which are used by synthetic detergent and fertilizer manufacturers and sugar refiners.

Among other Hooker plants are those at Columbus, Miss.; Columbia, Tenn., and Adams, Mass. Headquarters plant for the phosphorus operation is at Jeffersonville, Ind.

Study Available

NEW YORK—Theodore Riedeburg Associates announces a new research study on marketing, development, sales and distribution of pesticides to the agricultural field.

This report will now enable manufacturers to look into, in depth, new and different avenues of agricultural chemical marketing heretofore not explored, the company stated.

SAFETY

(Continued from page 1)

Wilkins and L. C. Smith, staff representatives of the National Safety Council, Chicago; John S. Mark, production manager, Fertilizer Manufacturing Division, Farm Bureau Co-op Assn., Inc., Columbus, Ohio; C. E. Alkire, superintendent, W. R. Grace & Co., Davison Chemical Division, New Albany, Ind., and James Christie, Portland Cement Assn.

The program was broken down into nine separate units with each one of the latter still further separated into sub-sections; the latter numbering from as little as two to others containing as many as eight subsections. The first five units were covered the first day and the remainder during the second and closing session.

The first day got off to a brisk start with introductions and opening remarks by the Messrs. E. M. Jones, "Billy" Creel, Zenas H. Beers, Midwest regional director, National Plant Food Institute, Chicago, and Roy Benson, manager, Industrial Department, National Safety Council.

Presentation of the subject of "Accident Prevention," dealing with the cost of accidents, first-aid treatment and related matters was made by Jim Christie, former staff representative of NSC, and now associated with the Portland Cement Assn. Billy Creel's subject was "Know Your Accident Problems." He touched on matters of checking operations for hazards, principal sources of injuries, investigation of accidents, etc.

"The Human Element" was covered by R. M. Wilkins, who showed that the end-results of a safety program are in direct proportion to the enthusiasm of the working force, with the latter primarily dependent upon the effectiveness of communciation between the workers and the safety supervisor. L. C. Smith, NSC staff member, detailed "Instructions for Safety," majoring on the point that safety instructions really constitute the supervisor's first job and are one of his main considerations, if not the main one. Supplementing this phase of the supervisor's responsibilities, Marshall Petersen, also of the NSC staff, presented a demonstration of a "Successful Method of Job Instruction."

Once during the morning and once during the afternoon sessions of the first day, films were shown from the "Communications for Safety Series" —the first one being "Let's Talk About Safety" and the second, "Take a Talkie Break."

The closing presentation for the day was made by C. E. Alkire, of New Albany, Ind., who discussed "Departmental Housekeeping"and its importance in determining the success or failure of a supervisor in his chosen field.

Early in the second day's curriculum a small group met to consider suitable questions for consideration during the afternoon, under the general heading of "Special Problems."

In turn, this was followed by Marshall Petersen's discussion of "Fire Prevention" — undoubtedly a subject which was termed as having priority at any gathering called for promoting plant safety. The subject was said to be important not only from the standpoint of increased hazards and danger of accidents and injuries incidental to a plant fire, but also that a disastrous fire can and often does result in heavy pay-losses to employees and even heavier property damage which the employer has to absorb to a substantial degree.

Mr. Petersen's presentation was followed by that of Mr. Mark whose assignment covered "Material Handling." He stressed the necessity for development of well-coordinated efforts to eliminate or at least minimize the dangers arising from common injuries.

The first items on the afternoon agenda were the matters of "Special Problems" fed by questions selected at the early morning conference. The fore part of this discussion was devoted to the handling of both liquid and dry materials; E. M. Jones being moderator on former and C. E. Alkire on the latter.

The final phase of the "Special Problems" discussion swung over to more general situations that might confront any plant supervisor in the every-day course of his duties. John Mark held sway at the podium.

Elmer Perrine, Nitrogen Division, Allied Chemical Corp., New York, national chairman of the fertilizer section, National Safety Council, though prevented by previous commitments from participating in the entire program, appeared on the program during the final day to take part in the "special problems" phase of the discussions.

Final remarks by Emerson Jones and presentation of certificates of graduation, wallet size for easy carrying rather than to be framed and hung over the plant supervisor's desk, concluded the serious portion of the action-packed two-day session.

CYANAMID

(Continued from page 2)

Malcolm listed the following reasons for this acceptance:

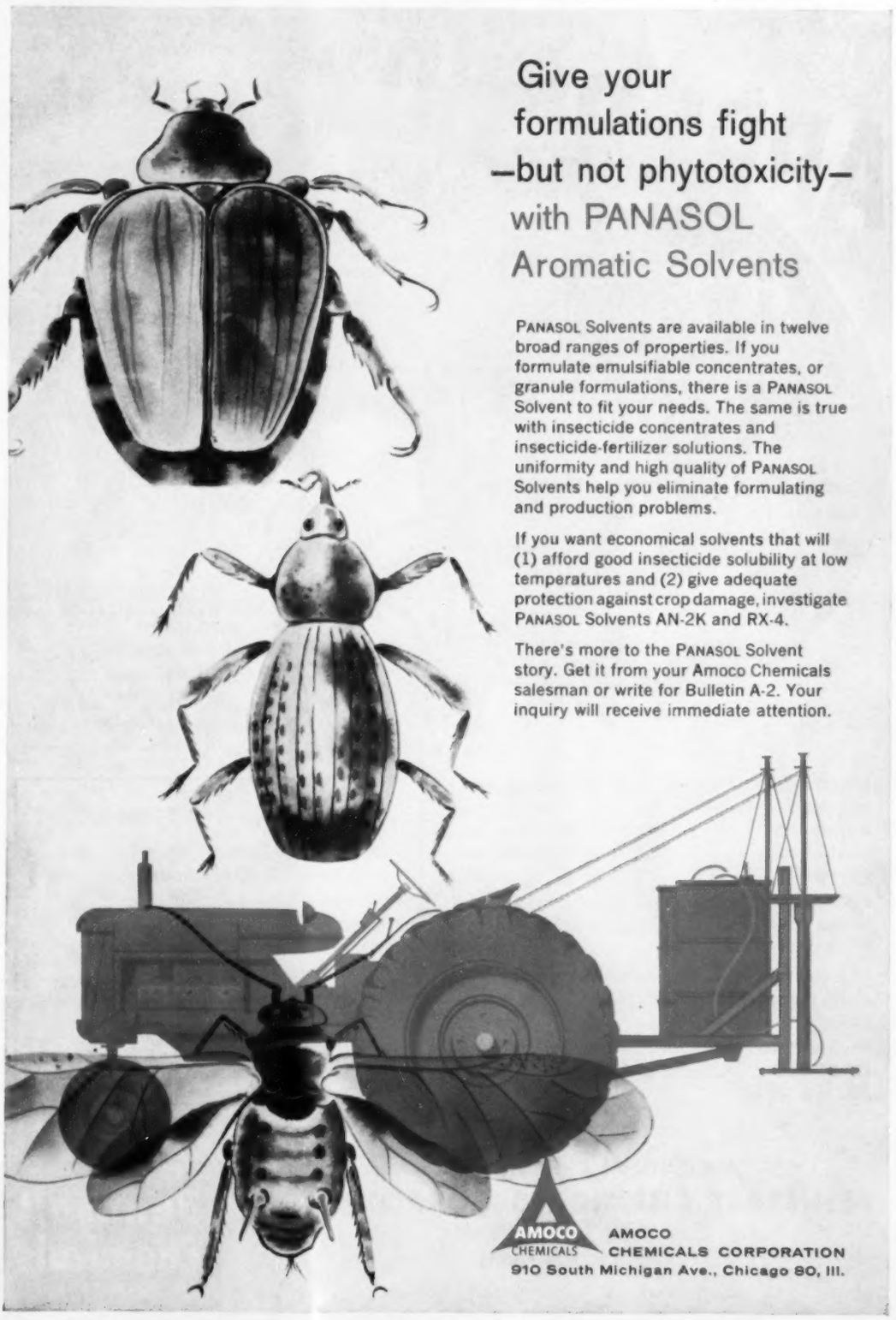
When phosphoric acid is used in formulation of granular mixed fertilizer, the total cost of raw materials used in the fertilizer is lowered. The amounts of sulfuric acid and triple superphosphate needed in a formula are eliminated or reduced, and the amounts of lower-cost normal superphosphate and anhydrous ammonia that can be used are increased.

Wet-process phosphoric acid contains small amounts of sulfuric acid and iron and aluminum phosphates, which impart properties that make the fertilizer mixture easier to granulate.

Wet-process phosphoric acid also contains desirable trace elements—sulphur, iron, aluminum, manganese, zinc, calcium and magnesium.

Wet-process phosphoric acid is rapidly replacing higher-cost furnace-process phosphoric acid in the manufacture of liquid mixed fertilizers.

The new facilities will also provide an increased tonnage of triple superphosphate. This product and phosphoric acid will be marketed by Cyanamid's agricultural division.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PANASOL Solvents are available in twelve broad ranges of properties. If you formulate emulsifiable concentrates, or granule formulations, there is a PANASOL Solvent to fit your needs. The same is true with insecticide concentrates and insecticide-fertilizer solutions. The uniformity and high quality of PANASOL Solvents help you eliminate formulating and production problems.
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AMOCO CHEMICALS
AMOCO CHEMICALS CORPORATION
910 South Michigan Ave., Chicago 80, Ill.

PRODUCTION PROCESS PATENTS

2,948,655

Non-Dusty Water-Dispersible Fungicidal Composition. Patent issued Aug. 9, 1960, to Albert L. Flenner, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del. A non-dusty, water-dispersible fungicidal composition containing from about 63-68 parts by weight of tetramethyl thiuram disulfide, 1-3 parts by weight of bentonite, 25-30 parts by weight of kaolinite, 0.25-0.75 part by weight of sodium lignin sulfonate, 0.25-0.75 part by weight of sodium alkyl aryl sulfonate, 0.5-1.5 parts by weight of alkylated aryl polyether alcohol, and 1.0-3.0 parts by weight of paraffinic summer spray oil, the total parts by weight in any one composition being 100, such composition being composed of particles whose average diameters are not greater than about 20 microns.

2,948,678

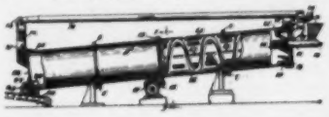
Beneficiated Clay Compositions and Method of Beneficiating Clay. Patent issued Aug. 9, 1960, to Finis Turner and Edward T. Dillon, Houston, Texas, assignors to Magner Cove Barium Corp., Houston. A composition in the production of viscous clay slurries comprising a clay selected from sodium montmorillonite and calcium montmorillonite, from 0.1-10 lb. per ton of clay of a copolymer selected from the group consisting of ethylene-maleic anhydride copolymer having a specific viscosity of at least 0.1 and isobutylene-maleic anhydride copolymer having a specific viscosity of at least 0.5, and, when the selected clay is of the calcium montmorillonite type, a water-soluble ionizable alkali metal compound having an anion capable of reacting with a calcium ion to form a water-insoluble precipitate, said compound being present in an amount in the range of 1-7% by weight of said clay.

2,948,632

Surface Modified Kaolin Clay. Patent issued Aug. 9, 1960, to Charles G. Albert, Basking Ridge, and James R. Wilcox, Westfield, N.J., assignors to Minerals & Chemicals Corporation of America, Menlo Park, N.J. Kaolin clay of improved dispersibility in liquid organic media containing from 0.5-5.0%, based on the weight of the clay, of rosin amine stearate coated on the surface thereof.

2,948,593

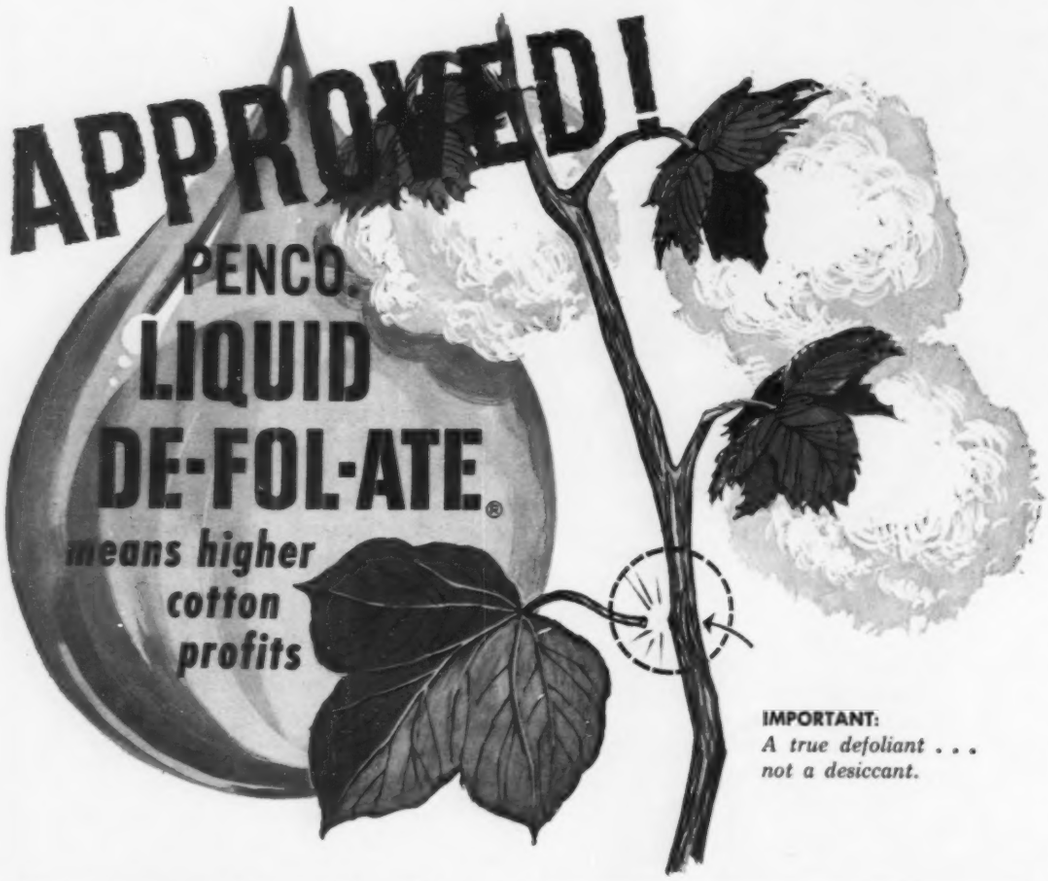
Digester for Converting Inorganic Material into Assimilable Plant Food. Patent issued Aug. 9, 1960, to John D. Larson, Hinsdale, Ill.



A digester for converting inorganic material into assimilable plant food, comprising the combination of an elongated drum, a plurality of sets of supporting rollers upon which said drum is rotatably supported, means for rotating said drum, a spiral material propelling flange projecting inwardly from the walls of said drum, longitudinally extending agitating devices disposed between the spirals of said propelling flange, means for closing the ends of said drum so as to provide a substantially sealed fermentation chamber in which bacteriological activity in the material being treated is promoted, means for feeding material to be processed into the intake end of said drum, means for delivering the processed material from the other end of said drum, means for creating and maintaining a circulation of a gaseous fluid through said drum from end to end thereof in the direction of the travel of the material being processed therein, said circulating means including a conduit communicating with the delivery end and a conduit communicating with the intake end of said drum, a blower communicating with said first mentioned conduit, an intermediate conduit leading from the blower and said first mentioned conduit and thereby connecting the intermediate conduit with the feeding end of said drum, temperature control means in said conduit communicating with the intake end of said drum to automatically control the temperature in said drum, dehumidifying means in the conduit communicating with the delivery end of said drum for automatically removing excess moisture from the gaseous fluid in said last mentioned conduit, and moisture supply means in said conduit communicating with the intake end of said drum for supplying any required moisture to said circulating gaseous fluid to maintain a predetermined humidity in said drum.

2,947,659

Stabilized Bordeaux Mixture Composition. Patent issued Aug. 2, 1960, to Charles H. Rogers, Norwalk, Conn., assignor to R. T. Vanderbilt Co., Inc., New York. Bordeaux mixture containing, in an amount from 1 to 3% by weight of the solids content of the Bordeaux mixture, a lignosulfonate and the product formed by the reaction of 1 to 6 moles of an aliphatic hydrocarbon monocarboxylic acid containing from 8 to 18 carbon atoms, and 1 mole of a polyhydric alcohol containing 3 to 9 carbon atoms and 3 to 6 hydroxyl groups, the amount of unesterified acid being zero to about 75 mole per cent of the total equivalent acid, and the amount of unesterified alcohol being zero to about 75 mole per cent of the total equivalent alcohol, the relative proportions of lignosulfonate being within the range from 15 to 25 parts by weight of lignosulfonate to 0.75 to 1.5 parts by weight of the equivalent amount of product obtainable from said acid and alcohol at complete esterification.



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A BUSINESS PAPER FOR THE FARM CHEMICAL INDUSTRY

Communist Bugs . . .

Red Mites Devour What Reds Might Eat

A FRANTIC demand for the government to increase production of pesticides was noted in the "People's Daily," Communist newspaper in Red China, following a severe infestation of both insects ("Red" Mites, perhaps?) and plant diseases which critically hurt agricultural production this year. The paper pointed out that the depredations of bugs and various types of fungus diseases, in addition to drouths and floods in different regions of the country, had all but done in the agricultural efforts of the people.

Production facilities for making anything like adequate amounts of pesticides are not plentiful in China, nor in any other Asiatic country, for that matter. Plants in the United States, however, turn out hundreds of thousands of tons of effective toxicants, well formulated, well distributed, well applied for the benefit of agriculture. The manufacturing segment of the industry can well be proud of the job it has done and continues to do. Even though such efforts sometimes appear to be thankless, it is rather significant, we think, to see how agriculturists in other parts of the world have to struggle with inadequate weapons, to harvest ample crops.

★ ★ ★

THE ABOVE item reminds us that anywhere in the world, it is just about impossible to farm with any degree of efficiency, without the use of pesticides. In a recent issue of its "News and Pesticide Review," the National Agricultural Chemicals Assn. presented an article pointing out these facts in graphic manner. It quoted experts in various agricultural fields on what would happen if pesticides were either unavailable or restricted in their use.

To summarize the findings, it turned out that vegetables and fruits would be practically impossible to raise commercially in the U.S. without pesticides; field crops and forage would be greatly reduced through pest activity; it would be impossible to carry out present efficient practices of raising hogs, for instance, in large numbers on relatively little land, because of the prevalence of internal parasites now controlled by pesticides; cotton yields would be reduced to an uneconomical level (records kept over the past 37 years in Louisiana, Texas and South Carolina show pesticides have increased cotton yields almost 100%) and without means of controlling pests, embargos would have to be placed on many more plants and animals than at present, to prevent spread of insects and diseases.

Manufacturers of pesticides know also that a ban on chemicals would result in losses of food quality resulting from spoilage. This would be particularly true in weevil-infested grains, beans, peas and peanuts; bug-infested flour, cereals and dried fruits.

So the Chinese Reds appear to be justified in clamoring for more chemical products for pest control. It seems incredible that so many supposedly knowledgable people in the U.S. should seek to stop the use of pesticides.

Future Needs Demand More Chemical Output

PROSPECTS for greater fertilizer production and for more pesticides to protect needed crops of the future are seen clearly in the recent comments by Dr. Richard Bradfield, head of the agronomy department at Cornell University, at the recent International Soil Science Conference at Madison, Wis. Dr. Bradfield declared that a projection of current rates of population growth means that the number of people in the world eventually will "greatly exceed the food supply."

The U.S., he said, will have to carry a major part of the responsibility for a better-fed world at least for the next 25 years but, even so, the day may come when the number of people in the world will outweigh efforts to feed them.

It should be encouraging, however, for people to know that production facilities and know-how in the agricultural chemical industry continue to grow, and that the products from these plants all around the country will go a long way toward postponing the day of actual shortages of food.

It is obvious, from both economic and humanitarian standpoints, that adequate tonnages of crops cannot be grown on fewer and fewer acres without the help of much more plant food than has ever been used before. And by the same token, it would be rather foolish to allow much of such bumper crops to be taken over and destroyed by insects.

Research for better and more economical ways to produce fertilizers and pesticides should be continued at full speed despite temporary food surpluses. The manufacturers of these chemical products have done a monumental job of supplying needed materials, and will continue to do so.

Expansion the Keynote in Chemical Manufacturing

EXPANSION appears to be the key word in the agricultural chemical industry these days. Expansion of production facilities, of storage units, personnel and markets. Likewise, current production figures are also on the uptrend for the most part.

Industry news items for the past several weeks have underscored this situation throughout the trade . . . here are some samples: California Spray-Chemical Corp. announces early construction of a $22 million plant on the Mississippi River in Southeastern Iowa; U.S. Phosphoric Acid Division of Tennessee Corp. to add 50% to its output through new facilities at Tampa, Fla.; a new pesticide plant in Colorado by Niagara Chemical Division of Food Machinery & Chemical Corp.; new storage facilities for Mid-South Chemical in Memphis; plans for a new phosphoric acid production plant at Bartow, Fla., by Swift & Co.; International Minerals & Chemical Corp. purchases two fertilizer plants in Minnesota; new ammonia storage facilities at two locations by Phillips Chemical Co.; an expansion program by Border Chemical Co., Ltd., in Canada in connection with its new sulfuric acid plant; Southern Nitrogen Co. announces $1.3 million expansion program of its Savannah facilities; E. I. duPont de Nemours & Co. to increase its storage facilities in West Virginia and to expand and modernize its sulfuric acid plant in Kentucky, and Southwest Potash Corp.'s facilities at Carlsbad, N.M., are to be expanded greatly at a cost of $3 million. The latter announcement was made on the heels of its earlier move to construct a $7 million plant in Vicksburg, Miss., to produce nitrate of potash and chlorine.

The above notations are not meant to be an exhaustive listing of the trade's expansive activities, but they do indicate a definite movement in that direction.

The long range effects of expansion are difficult to envision, since there are so many degrees and factors involved. One thing is pretty sure, however, that the influx of new equipment and modern methods of manufacturing will tend to raise the industry's general level of productive technology. This in the long run is for the good, since efficient, modern means of production are by far the most economical, and other manufacturers are going to follow suit before too long.

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INDUSTRY MEETINGS

Aug. 28-31—Fifty-second annual meeting, American Phytopathological Society, Green Lake, Wis.

Sept. 8-9—Conference on Fumigation Safety, Kansas State University, Manhattan, Kansas.

Sept. 12-14—Eighth annual meeting and conference, Canadian Agricultural Chemicals Assn., Britannia Hotel, Lake of Bays, Muskoka, Ont., Can.

Sept. 14 — University of Illinois Agronomy Field Day, Agronomy Research Farm, Urbana, Ill.

Sept. 24-26 — Western Agricultural Chemicals Assn. 31st annual meeting, Palm Springs Riviera Hotel, Palm Springs, Cal.

Sept. 27-29 — National Agricultural Chemicals Assn. annual convention, Coronado Hotel, Coronado, Cal.

Sept. 29-30 — Northeast Fertilizer Conference, Hotel Hershey, Hershey, Pa.

Oct. 5-6—Southeast Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Oct. 13—Association of American Control Officials' States' Relations Committee meeting, Shoreham Hotel, Washington, D.C.

Oct. 14—Association of American Control Officials annual meeting, Shoreham Hotel, Washington, D.C.

Oct. 17-21—National Safety Congress, 48th annual meeting. Fertilizer Section meets at Morrison Hotel, Chicago.

Oct. 27-28—Eastern Branch meeting, Entomological Society of America, New Yorker Hotel, New York.

Nov. 2-4—Fertilizer Industry Round Table, Hotel Mayflower, Washington, D.C.

Nov. 3-4—Pacific Northwest Plant Food Assn. 1960 annual convention, Boise, Idaho.

Nov. 9-11—National Fertilizer Solutions Assn., annual convention, Peabody Hotel, Memphis, Tenn.; Muriel F. Collie, executive secretary.

Nov. 13-15—California Fertilizer Assn., 37th annual meeting, del Coronado Hotel, Coronado, Cal.

Nov. 14-19—Mexican Association of Insecticide and Fertilizer Manufacturers, Merida, Yucatan.

Nov. 28-30 — Soil and Crop Science Society of Florida, Fort Harrison Hotel, Clearwater, Fla.

Nov. 28-Dec. 1—Entomological Society of America, Chalfonte-Haddon Hall Hotel, Atlantic City, N.J.

Nov. 30 — New Jersey annual fertilizer conference, Rutgers University, New Brunswick, N.J. Sponsored by Plant Food Educational Society of New Jersey.

Dec. 12-14 — North Central Weed Control Conference, Hotel Schroeder, Milwaukee, Wis. T. W. Tibbets, Department of Horticulture, University of Wisconsin, Madison, public relations committee.

1961

Jan. 5-7 — Eleventh annual convention, Agricultural Aircraft Assn., Inc., Hotel El Dorado, Fresno, Cal.

Jan. 12-13—Arizona Aerial Applicators Assn. 8th annual conference, The Wigwam, Litchfield Park, Ariz.

Jan. 19-20 — 14th annual Southern Farm Forum, Roosevelt Hotel, New Orleans, La.

June 27-29—Twelfth Annual Fertilizer Conference of the Pacific Northwest, Marion Hotel, Salem, Ore. Chairman: B. R. Bertramson, agronomist, Washington State University, Pullman.

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CHEMIST DIES

LEXINGTON, KY. — Dr. James Spencer McHargue, 82, retired head of the department of research chemistry at the University of Kentucky, died at his home here recently. In 1935 Dr. McHargue was awarded a $5,000 prize by the Chilean Nitrate Co. of New York for research in minor chemical elements.

CALENDAR FOR 1960-61

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Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 20c per word; minimum charge $3.00. Situations wanted, 15c a word; $2.25 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 25c per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $12 per column inch.

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Box 628 Lima, Ohio

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Please send resume including academic background, work experience, and salary requirements to:

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Employee Relations Division
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Chemical Lime Plant Scheduled for Florida

STAMFORD, CONN. — Florida industries and other users will have a new nearby source of chemical lime next summer when Chemical Lime, Inc., starts operation of its new two-million-dollar plant at Brooksville, Fla.

Chemical Lime, Inc., P.O. Box 1012, Ocala, Fla., has been organized to manufacture quicklime and hydrated lime for the chemical processing and other industries of the state. The new company has awarded a contract to Dorr-Oliver Engineering, Ltd., Stamford, Conn., to design and construct a 200 tpd plant for processing a large, accessible deposit of Ocala limestone at the quarry of Camp Concrete Corp. Dorr-Oliver is to provide the plant on a turnkey basis, with completion scheduled for mid-1961.

Preliminary engineering by Dorr-Oliver calls for a dual Dorreo Fluo-Solids® System, with a single-stage reactor for drying the crushed limestone and a multiple stage reactor for calcining. Both rail and truck shipping facilities will be available, and all grades of both quicklime and hydrated lime will be offered in bulk or bagged.

New District Manager

ATLANTA, GA.—Laurel G. Smith has been named Southeastern agricultural chemicals district manager for Shell Chemical Co. with offices in Atlanta.

He succeeds Eric E. Heuermann, who has been in the Atlanta job since 1952, and who will become Pacific Coast district manager in San Francisco.

HEADS INSTITUTE

SKOKIE, ILL.—E. Meade Wilson, area manager in Mulberry, Fla., for the plant food division of International Minerals & Chemical Corp., recently was elected president of the Florida Agricultural Research Institute at the annual meeting in Fort Lauderdale.

New Fertilizer Handbook

SACRAMENTO, CAL. — The Soil Improvement Committee of the California Fertilizer Assn. announced that it plans to distribute the revised Third Edition of the "Western Fertilizer Handbook" in November.

This issue will contain about 200 pages, with a changed cover design in agricultural green and an extra title imprint on the left bound cover edge for reference convenience. With added charts and plates also revised and new text, this new book is to be completely up-to-date in subject matter.

Increased publication costs have made it necessary to change the former retail price from $1 to $1.50 per copy effective June 23, 1960. Copies may be ordered on a prepaid basis from the California Fertilizer Assn., 719 "K" Street, Sacramento 14, Cal.

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Ernie
Herrbach
stands guard over the quality of
Anhydrous Ammonia
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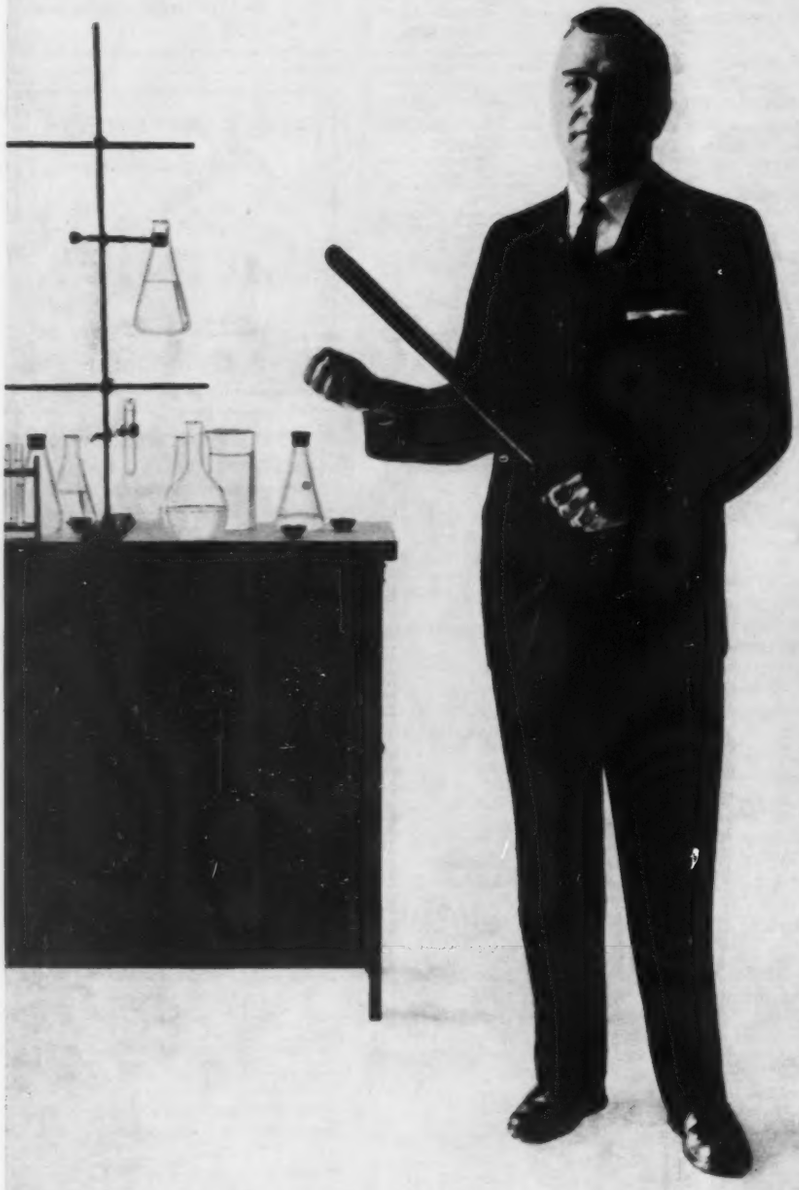

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